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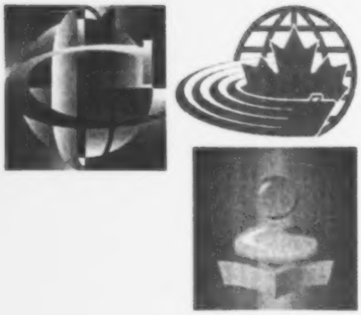
Culture, Tourism and the Centre for Education Statistics

Location of Study and the Labour Market Success of Immigrants to Canada



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Culture, Tourism and the Centre for Education Statistics
Research papers

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Jacques Ewoudou, Statistics Canada

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Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Acronyms

The following acronyms are used in this publication:

CEGEP	Collège d'enseignement général et professionnel
OECD	Organisation for Ecomomic Co-operation and Development
OLS	Ordinary Least Squares
SEAMEO	Southeast Asian Ministers of Education Organization

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Definition of concepts used in this report

Immigration status

Landed immigrants: Individuals who have been granted the right to live in Canada permanently by immigration authorities.

Canadian-born: Individuals who are Canadian citizens by birth.

Very-recent immigrants: Individuals who have been landed immigrants to Canada for 5 years or less, i.e., those who arrived in Canada between 2001 and 2006.

Recent immigrants: Individuals who have been landed immigrants to Canada for 5 to 10 years, i.e., those who arrived in Canada between 1996 and 2001.

Established immigrants: Individuals who have been landed immigrants to Canada for more than 10 years, i.e., those who arrived in Canada before 1996.

Labour force status

Unemployed: Individuals who have been laid off by their employers, those who have been fired or have quit and are looking for other work, and those who are just entering or re-entering the labour force but have not found a job as yet.

Not in the labour force: Individuals who are not employed and not looking for work.

Self-employed: Individuals who work mainly for themselves, with or without paid help, operating a business, farm or professional practice, alone or in partnership.

Undereducated employees: Workers whose highest educational attainment is less than the modal educational level in their occupation.

Correctly-matched employees: Workers whose highest educational attainment is similar to the modal educational level in their occupation.

Overeducated employees: Workers whose highest educational attainment is greater than the modal educational level in their occupation.

School attendees: Individuals who attended school, either full time or part time, during the nine-month period between September 2005 and May 16, 2006.

Other concepts

Population of interest: Adults aged 25 to 64; Canadian-born, very-recent, recent and established immigrants with a postsecondary education.

Modal educational level: Educational level that occurs the most frequently in a given occupation.

Location of study: Country in which an individual completed his or her highest postsecondary credential (Canada, the United States, the United Kingdom, the Philippines, India, China, Pakistan, Poland, France, South Korea, Romania, the Hong Kong Special Administrative Region, the Russian Federation, Germany, Iran and other). These countries account for just over 95% of the target population.

Highest postsecondary certificate, diploma or degree: Registered apprenticeship certificate or other trades certificate or diploma; college, CEGEP or other non-university certificate or diploma; university certificate or diploma below bachelor level; bachelor's degree; university certificate or diploma above bachelor level; degree in medicine, dentistry, veterinary medicine or optometry; master's degree; earned doctorate.

Occupation: The kind of work done by individuals during the week preceding the Census or their job of longest duration since January 1, 2005.

Employment earnings: Total income received during 2005 as wages, net income from unincorporated non-farm business and/or professional practice and net farm self-employment income.

Executive summary

Background

Prior research suggests that despite the increase in educational attainment levels among immigrants, a significant gap remains in their economic outcomes (employment ratios and earnings) compared to non immigrants with similar attributes (for Canadian studies, see for instance, Ferrer and Riddell, 2008; Picot, 2008; Picot, Hou and Coulombe, 2007; Frenette and Morissette, 2003; for international literature, see for instance Chiswick and Miller (2008; 2009) for the United States; Liebig (2007) for Australia; Stillman and Maré (2009) for New Zealand). This research also suggests that differences exist in how well internationally-educated immigrants are doing in host countries' labour markets.

These findings are puzzling for researchers and public policy makers given that the standard human capital model pioneered by Becker (1964) predicts that greater education will lead to higher labour productivity and employment earnings. Indeed, the available empirical evidence suggests a strictly positive relationship between educational investment and labour market outcomes (for Canada, see for instance Ferrer and Riddell, 2002; Finnie and Frenette, 2003; Hansen, 2006; for a review of international empirical evidence, see for instance, Psacharopoulos and Patrinos, 2002). Starting in the early 1980s, the Canadian economy has experienced an acceleration of technological change, mainly driven by computerization. This in turn has generated two opposite phenomena on Canada's labour markets: on one hand, a significant decrease in the demand for less-educated, less-skilled workers, while on the other hand, a strong increase in the demand for highly-educated, highly-skilled workers (Ehrenberg and Smith, 2002).

Following the seminal work by Chiswick (1978), a growing body of empirical immigration-based research explains intra-group variations in post-migration labour market outcomes of internationally-educated immigrants by differences in the international transferability of skills acquired via the education system in the source country. It has been increasingly argued that since each national school system has country-specific components, only some of which can be easily transferable to other country contexts, the success of a typical internationally-trained immigrant in the host country's labour markets will be determined by the relative importance of these two components in his/her pre-immigration education. In other words, immigrants with readily transferable training will quickly succeed economically in the destination country compared to those with training that is specific to the country of origin or graduation.

The current study

Building upon this hypothesis, this study examines from a multivariate perspective, whether and how the location of postsecondary study influences the relative labour market success of immigrant workers in Canada, i.e., their employment status, earnings and education-job match rates, relative to those for the Canadian-born. To proceed, we: (i) take advantage of information on location of highest educational attainment first collected by the Census in 2006; (ii) restrict our population of interest to people between 25 and 65 years of age; (iii) focus on locations of postsecondary study that make up 95% of our target population, i.e., Canada, the United States, the United Kingdom, the Philippines, India, China, Pakistan, Poland, France, South Korea, Romania, the Hong Kong Special Administrative Region, the Russian Federation, Germany and Iran; (iv) identify seven mutually-exclusive labour force statuses, i.e., not in the labour force, unemployed, self-employed, undereducated employee, correctly-matched employee, overeducated employee and school attendee.

Findings

Descriptive statistics by location of study reveal that the majority of our population of interest is overeducated. This result is not surprising since participation in postsecondary education has significantly increased in Canada during the last two decades while Canadian immigration policy became more selective, i.e., skill-focussed, starting in the early 1980s. We note however that most landed immigrants, especially very-recent immigrants, have much higher overeducation rates than the Canadian-born.

For example, more than half of very-recent immigrants who completed their highest postsecondary education in the Philippines (58%) or in India (53%) are considered to be overeducated relative to their jobs, compared to just over 41% of the Canadian-born. We argue that this could reflect, at least in part, additional changes that were made in the selection policy in the early 2000s in order to allow applicants in the skilled worker class to earn 40% of the points required for acceptance in Canada for their educational attainment. Simple descriptive statistics of employment income by location of study and immigration cohort indicate that the Canadian-born with a postsecondary education have, on average, higher employment earnings. They are better off than almost all immigrants, and far better off, on average, than immigrants with a postsecondary education completed in Pakistan, Iran, South Korean or the Russian Federation.

In order to adjust our descriptive results for potential differences in observables shown to predict employment prospects and earnings, we use a statistical methodology that treats labour market behaviour as an endogenous process and account for selection bias when estimating the earnings impact of an immigrant's location of postsecondary study. Everything else held equal, we show that, compared to the Canadian-born, landed immigrants are less likely to be in the labour force, to be paid employees or to be self-employed. The multivariate results also indicate that immigrants' labour market behaviour is determined by the origin of their highest postsecondary education: compared to the Canadian-born, for example, very-recent immigrants who completed their postsecondary studies in Pakistan and South Korea were, respectively, 27% and 22% more likely to be out of the labour force. In contrast, those who completed their highest postsecondary diploma or degree in the Philippines, India or the Russian Federation were on average, only slightly more likely than the Canadian-born to be out of the labour force, at +3%, +7% and +6%, respectively.

The results of the analysis indicate that in the absence of Canadian postsecondary schooling, not all highly-educated immigrants benefit from their length of time as permanent residents. Compared with the Canadian-born, for example, immigrants who completed their postsecondary education in Pakistan or South Korea were more likely to be out of the labour force and less likely to be paid employees even after they had been permanent residents of Canada for at least a decade.

Meanwhile, established immigrants who completed their postsecondary studies in the United States, the United Kingdom or France had, on average, the same probability as the Canadian-born of being undereducated employees or self-employed. This last pattern was also found for established immigrants whose highest level of postsecondary education was completed in Canada.

We also found that the average Canadian-born adult with a postsecondary education is likely to have an earnings advantage over his/her immigrant counterpart, the magnitude of which depends on both the location of study and immigration cohort. For example, a Canadian-born adult with a postsecondary education is likely to earn 62% more than a very-recent immigrant who completed his/her postsecondary studies in Pakistan or in the Russian Federation. Meanwhile, the earnings gap between the Canadian born and very-recent immigrants who completed their highest postsecondary education in Canada, the United States and the United Kingdom was 32%, 30% and 25%, respectively. An analysis of the sensitivity of our results to both the immigrant status bias and the optimal comparison group bias offered similar conclusions, as did a country-level analysis (see Appendix 11.5). That is, relative to the Canadian born with similar observed attributes, immigrants with a postsecondary education aged 25 to 64 are more likely to experience a wage disadvantage that varies with the country of postsecondary education completion and duration of residence in Canada.

Implications

Ferrer and Riddell (2008) argue that many employers seeking to hire workers may use the country of origin of skills acquired through the education system as a screening device for perceived skill levels because productivity-related information on internationally-educated immigrants is generally costly to obtain, especially as they first enter Canada's labour markets. Under this null assumption, in light of all of our results, we argue that a typical Canadian employer who uses education to sort labour market participants by potential productivity level may attach greater economic value to educational qualifications from countries that have linguistic, economic and socio-cultural similarities to Canada. Conversely, that employer may undervalue educational qualifications from other countries, especially those from China, Pakistan, South Korea, the Russian Federation and Iran. In other words, the average prospective employer may not understand very well, and so may not be in a position to evaluate, the properties of postsecondary credentials from Pakistan, Russian federation, China or South Korean for the productivity of prospective labour market participants.

Chapter 1

Introduction

The labour market success of immigrants to Canada has generated interest among scholars and practitioners since Canada has traditionally accepted international migrants from almost all parts of the world for permanent residence. During the last two decades, however, this topic has become a major public policy issue and the subject of much systematic investigation as attested to by an array of recent empirical literature (see for instance; Picot, 2008; Picot, Hou and Coulombe, 2007; Frenette and Morissette, 2003). Why is the labour market success of long-term immigrants to Canada important? Is it simply a matter of social equity or a desirable optimum from the standpoint of sustaining Canada's economic growth in the long run?

There are at least two reasons why the labour market success of immigrants to Canada is both economically and socially desirable. First, with adequate employment income, immigrants can substantially improve their living conditions, as well as those of their families. Second, given the on-going impacts of technological change and the rising importance of knowledge-based activities in almost all industrialized countries, better utilization of immigrants' skills can efficiently contribute to the sustainability of the Canadian economic growth in the long run.[1] This study contributes to the debate about the labour market conditions of highly-educated immigrants to Canada by examining the value accorded to foreign-acquired training by Canada's labour markets.

Following the seminal work by Chiswick (1978), a growing body of the empirical immigration-based research explains observed differences in how immigrants are faring in the labour markets of host countries by differences in international transferability of skills acquired via the education system in the source country (for international evidence, see for instance Chiswick and Miller (2008; 2009) for the United States; Liebig (2007) for Australia; see Chapter II of this report for Canadian evidence). It has been increasingly argued in the literature that since each country's school system has country-specific components, only some of which can be easily transferable in other contexts, the success of a typical internationally-trained immigrant in the host country's labour markets will be determined by the relative importance of these two components in his/her pre-immigration education. In other words, immigrants with readily transferable education will quickly succeed economically in the destination country compared to those with training that is specific to the country of origin or graduation.[2]

Building upon this hypothesis, this study takes advantage of information collected for the first time by the Census in 2006 on location (country) in which an individual completed his/her highest level of postsecondary education.

Multivariate analysis is used to investigate whether and how the origin of educational qualifications influences the labour market success of internationally-educated immigrants in Canada. Much of the motivation for this study comes from arguments made by authors such as Ferrer and Riddell (2008) and Nekby (2002). According to Ferrer and Riddell (2008) who studied employment patterns in the Canadian economy, the average prospective employer may use information on location of study as a screening device or proxy for perceived skill levels since productivity-related information on internationally-educated immigrants is generally costly to obtain, especially as they first enter Canada's labour markets. Nekby (2002) claims that in a typical host economy with multiple source countries, the average prospective employer may more "readily recognize and accept foreign credentials from regions in close proximity to the host country, while being unsure of the value of work-related characteristics and credentials of immigrants from more geographically and culturally distant regions."

For most immigrants who choose to participate in the Canada's labour markets with foreign training, there is a greater chance that educational choices were determined by labour market dynamics outside of Canada. It could also be that for a sizeable number of them, educational systems attended are not necessarily similar to the Canadian educational system in terms of formal and informal aspects of schooling. Thus, if Canadian employers use information on educational attainment to sort prospective labour market participants by productivity level and reward them accordingly, there are some in the group of foreign-educated immigrants at the same level of educational attainment who will do well and others who will not. The difference would be determined, at least in part, by how prospective employers perceive the applicability of skills obtained via education systems in other countries in the Canadian economy. In other words, internationally-educated immigrants' abilities to successfully convert their education into employment and labour earnings after their acceptance to Canada would be determined to some extent by employers' assessment of similarities or dissimilarities between schooling systems attended abroad and schooling systems in Canada.

Further context for this empirical study is the fact that Canada's immigrant population is increasingly coming from Eastern Europe, South Asia, East Asia, West Asia and Africa, areas that until the mid 1980s were considered non-traditional sources of Canadian immigration (Picot, 2008).[3] Further, permanent immigration is currently Canada's main source of population growth and recent population projections indicate that by 2031, 46% of Canadians aged 15 and over will be foreign-born or have at least one foreign-born parent, compared to 39% in 2006 (Statistics Canada, 2008; 2010).

The remainder of this report is organized as follows. Chapter 2 summarizes the findings of a review of the literature on this topic. Chapter 3 discusses the relevancy of the research and Chapter 4 presents the data used. Descriptive statistics are discussed in Chapter 5. Chapter 6 presents the methodology used in the multivariate analysis. The multivariate results are presented in Chapter 7 while a sensitivity analysis is performed in Chapter 8. Implications and shortcomings to our research as well as future research needs are discussed in Chapter 9, while Chapter 10 offers concluding remarks.

Chapter 2

Literature review

The extent to which differences in skills acquired through the postsecondary educational system in the country of origin or graduation affect immigrants' labour market success in Canada has generated increased interest among economists, psychologists, sociologists as well as anthropologists. While the empirical evidence is less plentiful, it points to the extreme sensitivity of immigrants' employment prospects and earnings to the origin of human capital (i.e., education and/or experience).

In one recent analytical study, for instance, Plante (2010) finds that immigrants who completed their highest level of postsecondary education in Canada have higher earnings than almost all internationally-educated immigrants, even after controlling for the influence of cohort of immigration, gender, province of residence and the number of worked hours. She attributes this finding, at least in part, to the low international transferability of skills acquired through education acquired in some source countries of immigrants.

Mata (2008) who examined the relationship between the location of highest postsecondary degree completion and the labour market outcomes of immigrants to Canada reaches a similar conclusion, that is, that immigrants who completed their highest level of postsecondary education in Canada have higher employment and labour market participation rates and lower unemployment rates than internationally-educated immigrants. However, Mata also finds that foreign-educated immigrants who completed their postsecondary education in a Western country, such as France or Germany, had higher employment rates than immigrants with a Chinese, Pakistani or South Korean degree. Gilmore and Le Petit (2008) have similar findings.

Ferrer, Green and Riddell (2006), Alboim, Finnie and Meng (2005), Sweetman (2004) and Sweetman and McBride (2004) have also documented variations in the economic success of foreign-educated immigrants. In particular, Ferrer et *al* show that Canadian education and experience are more highly rewarded in Canada's labour markets than their foreign equivalents. They explain this finding in part by the fact that foreign-educated immigrants may lack strong literacy skills in either English or French. Alboim et *al* show that human capital acquired by immigrants before coming to Canada has less economic value than human capital of the Canadian born with similar qualifications. However, it is comparable in terms of earnings to human capital acquired by immigrants after coming to Canada.

Sweetman finds that in Canada's labour markets, immigrants from countries with the highest average scores on international cognitive skills tests enjoy higher employment earnings than all other immigrants, even after accounting for gender and education level. Finally, Sweetman and McBride provide evidence indicating that immigrants with a Canadian degree experience better labour market outcomes in terms of earnings, hours worked per week and weeks worked per year than internationally-educated immigrants. They conclude that, with respect to acquired schooling, Canadian education plays a critical role in the successful economic integration of immigrants to Canada because a year of schooling in most new source countries of Canadian immigration does not equal a year of schooling in Canada.

The labour market performance of immigrants to Canada has also been examined in terms of the match between post-immigration professional occupation, level of education and field of study. For instance, Zietsma (2010) investigates the extent to which immigrants whose postsecondary field of study is expected to lead to employment in regulated occupations were in fact working in that field. According to her findings, immigrants are less likely than the Canadian born to work in a regulated occupation for which they were trained. Likewise, Boyd and Schellenberg (2007) show that recent immigrants whose training in engineering or medicine was completed in a foreign institution are less likely than the Canadian born with a similar education obtained in Canada to be employed in an occupation matching their educational credentials. These authors show, however, that among internationally-educated doctors and engineers, education-job mismatch is likely to be higher for those trained in Southeast Asia or East Asia compared to those who received the same degree from a European or South Asian institution.

After having examined education-job mismatch among very-recent immigrants with a university degree, Galarneau and Morissette (2004) concluded that immigrants who came from South Asia and Southeast Asia are more likely to occupy professional positions requiring at most a high school diploma, whereas those least likely to occupy these types of positions came from North America, Northern Europe, Western Europe or Oceania. Boyd and Thomas (2001) find that among Canada's permanent residents who studied engineering, those who studied abroad are more likely to be out of the labour force and less likely to find paid employment, as compared to their Canadian-born counterparts or immigrants with a Canadian degree.

Their findings also suggest that when internationally-educated engineers have a paid job, it is less likely to be in an occupation that is commensurate with their educational qualifications. Plante (2010) reports that regardless of the duration of residence and the location of foreign postsecondary study, internationally-educated immigrants have lower education-job match rates than their Canada-educated counterparts and the Canadian-born. Finally, Sweetman and McBride (2004) show that the private returns to high-paying fields of study (such as sciences and technology) for Canada-educated immigrants are closer to those for the Canadian-born than is the case for foreign-educated immigrants. Conversely, foreign-educated immigrants have, on average, an earnings premium over the Canadian-born and immigrants with a Canadian degree when it comes to low-paying fields of study (such as the arts and humanities).

Chapter 3

Where does this study stand?

Prior empirical research has been instrumental in linking observed variations in the relative economic conditions of Canada's immigrants to differences in the transferability of skills acquired via the education system in the source or graduation country on Canada's labour markets. However, some outstanding issues remain that require additional in-depth investigation. For instance, Gilmore and Le Petit (2008) do not include individuals with non-university postsecondary education, although this demographic group represents a sizeable portion of the Canadian workforce. Zietsma (2010) focuses only on people working in regulated occupations, and therefore, is not able to inform the debate on the economic performance of foreign-educated immigrants working in non-regulated occupations and the trades.

Plante (2010) offers a more complete socio-demographic profile of internationally-educated immigrants with postsecondary qualifications and a full portrait of their employment outcomes compared to immigrants with Canadian degrees and the Canadian-born. However, this study like the two former, does not account for a variety of factors that can have a differential impact on labour market outcomes of immigrants and the Canadian-born.[4] Thus, it remains unclear the degree to which their results are attributable to differences in other characteristics strongly correlated with job quality and employment earnings.

The study by Galarneau and Morissette (2004) covers only labour market outcomes of recent immigrants, whereas Boyd and Schellenberg (2007) study solely the outcomes of doctors and engineers. Ferrer, Green and Riddell (2006), Alboim, Finnie and Meng (2005) and Sweetman and McBride (2004) consider foreign-educated immigrants as having homogeneous credentials, which Sweetman (2004) does not empirically corroborate. However, due to the absence of direct information on location of degree completion in his data, Sweetman (2004) assumes that the country from which immigrants to Canada came equates to the place where they received their pre-migration highest level of education.

We know from the empirical migration research (see, for instance, Mayda, 2005) that international migration is determined by a combination of economic considerations (such as poverty, unemployment, prospects for higher wages, improved standard of living), political considerations (such as conflict, violence, poor governance, and political freedom), and social and cultural considerations (such as religion, family reunification, and human rights abuse and discrimination). A sizeable number of foreign-born individuals may, for many of the reasons stated above, graduate in a given foreign country, temporarily seek a living in a second foreign country and then choose to immigrate permanently to Canada. In support of this, Gilmore and Le Petit (2008) show that as of 2007, 25% of immigrants to Canada with a European degree were born outside Europe and two-thirds of those with an American university degree were born outside the United States. It is thus reasonable to argue that the use of such an imputation technique may seriously misclassify some low transferable skills as high transferable skills and vice versa or capture effects that have nothing to do with international skills transferability per se. This in turn could undermine a key conclusion of the study by Sweetman (2004), which is that on average, immigrants from countries with "high quality" educational outcomes have higher economic returns to education than those from countries with "low quality" educational outcomes.

Boyd and Thomas (2001) assume that immigrants who landed in Canada as adults were educated abroad whereas those who arrived early in life probably completed their education in Canada. The available evidence suggests that differences in the accumulation of schooling after migration leads to differences in earnings observed in the Canadian labour market among various immigrant groups (see for instance, Plante, 2010; Ferrer, Green and Riddell, 2006). Thus, it could be that a sizable number of foreign-born individuals who landed as adults chose to complete their education in Canada before participating in the labour market. Likewise, it could be that for unobserved reasons, a substantial number of foreign-born individuals who arrived in Canada at a young age chose to receive their degree in a foreign institution.

Under the null assumption that these two scenarios are plausible in the data used by Boyd and Thomas, it is safe to claim that this study may overestimate/ underestimate to some extent variations in how landed immigrants who studied in a given field outside Canada are doing in Canada's labour markets. Closer to our study, perhaps, is the empirical analysis reported by Mata (2008). However, this exploratory study relies on aggregated data derived from the 2006 Census tabulation and does not inform us about the impact of the location of postsecondary study on employment earnings of internationally-educated immigrants. Without further investigation, the results of this study are limited in their policy implication.

We complement past Canadian studies by using multivariate techniques and recent data to offer different perspectives on observed intra-group variations in the labour market performance of internationally-educated immigrants. Our analysis is important in understanding the real effect of location of study on the labour market outcomes of highly-educated immigrants to Canada because, contrary to most prior research, we: (a) take advantage of the information on location of postsecondary degree completion first collected by the Census in 2006;[5] (b) account for all potential labour market participants who have a postsecondary degree or certificate, regardless of occupation and field of study; and finally, (c) simultaneously examine the labour market success of immigrants in terms of their labour force status, wage earnings and the match between jobs and required education.

Chapter 4

Data

Data for the analysis are taken from the 2006 Census of Population. This database was chosen because it provides a very large cross-section of working-age individuals with extremely good information about the location of completion of highest postsecondary level of education. With this statistical information in hand, it is possible to directly examine labour market outcomes by location of highest postsecondary qualification. An additional benefit of the 2006 Census is the inclusion of a number of other relevant control variables for predicting immigrant labour market outcomes, namely: year of immigration, immigration status, field of postsecondary study, occupation, official language(s) spoken, province of residence, household structure, and other socio-demographic information. The population used in this analysis satisfied four mutually non-exclusive criteria: he or she (i) completed a postsecondary certificate, degree or diploma;[6] (ii) was aged 25 to 64; (iii) was Canadian-born, an immigrant who landed between 2001 and 2006 (referred to as a very-recent immigrant), an immigrant who landed between 1996 and 2001 (a recent immigrant) or an immigrant who landed before 1996 (an established immigrant).

Criterion (i) comes from the fact that the 2006 Census collected information on location of study only for individuals with a postsecondary education.[7] Criterion (ii) is based on the idea that persons aged 25 to 64 are more likely to have completed their postsecondary studies and to be in the labour force. The reason for condition (iii) is twofold. First, non-permanent residents are not eligible for most paid jobs in Canada's labour markets. As a result, it is difficult to determine whether their labour market behaviour is dictated by their measured productive attributes, the legal environment or the ambient institutional framework. Second, because of their trans-national or extraterritorial nature, the majority of international institutions do not necessarily follow the same regulations as those governing the Canadian labour market in the recruitment or monetary reward process of workers.[8]

Applying these selection criteria to the 2006 Census resulted in a population with the following characteristics: Canadian-born (75%), established immigrants (17%), recent immigrants (4%) and very-recent immigrants (5%) (Table 1).

Table 1

Distribution of individuals with a postsecondary education aged 25 to 64, by immigration status, Canada, 2006

	Individuals with a postsecondary education	
Immigration status	number	percent
Very-recent immigrants[1]	516,697	4.95
Recent immigrants[2]	391,402	3.75
Established immigrants[3]	1,735,798	16.65
Canadian-born	**7,784,241**	**74.65**
Total	**10,428,138**	**100.00**

1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

Source: Author's calculations based on data from the 2006 Census of Population.

For the purpose of examining the effect that location of study has on labour market success, i.e., employment status, earnings and on the match between job and required education, we assume that individuals choose their labour force status given personal and non-personal factors. One could argue that it is the market that "creates" individual situations based on measured productive attributes (including educational attainment), the institutional framework and economic forces. In other words, observed labour market equilibriums or disequilibrium are largely determined by factors other than labour supply, such as production technology, business cycles, or main objectives of a typical prospective firm.[9]

We challenge this view point by suggesting that in practice, differences in labour market behaviour can be due to differences in occupational preferences. Indeed, some people may accept jobs that do not fully utilize their educational qualifications because that strategy may allow them to take on other responsibilities (Dougherty, 2005). Others, especially newcomers, may also choose this strategy in order to acquire work experience that will help them move more quickly to the top of the employment earnings distribution (Chiswick, 1978). The observed heterogeneity in labour market status could also reflect differences in opportunity costs: a highly-educated adult who initially has very limited financial means may take a lower-paid job, for example, in order to support his short-term consumption behaviour.

Differences in family circumstances can also affect labour market participation outcomes. For example, having an extended social network may be important in obtaining a professional position, especially when there is rationing because it can considerably reduce the costs of looking for paid employment, help to identify jobs suitable to acquired skills or provide the applicant with leads to the highest-paid positions (Franzén and Hangartner, 2006; Granovetter, 1995). In order to better understand the relationship between the location of study and immigrants' labour market behaviours, we adopt a middle point between these two view points. We assume that the job-allocation process is determined by market dynamics as well as workers' preferences and productive attributes. Labour force status is divided into seven mutually exclusive groups: unemployed, not in the labour force, self-employed, undereducated employee, correctly-matched employee, overeducated employee and school attendee.

The empirical overeducation/undereducation literature documents three approaches to ranking workers according to the level of match between education and occupation: the worker self-assessment approach, the job analysis approach and the realized-matches approach. The first is a subjective self-assessment by the survey respondents. The second approach takes the form of an objective comparison between the educational qualifications required in a particular occupation and the level of schooling of each person in that occupation. The third approach is based on a comparison of the prevalent level of schooling in a particular occupation and the education level of each individual in that occupation.[10] Similar to Chiswick and Miller (2009), we adopt the last classification strategy to categorize the different subgroups of paid employees by level of education-job mismatch.[11]

We proceeded as follows. First, we identified the most common certificate, diploma or degree in each of the 520 occupations based on the 2006 National Occupation Classification. Employees whose highest educational attainment was less (greater) than the modal educational level in their professional occupation were considered to be undereducated (overeducated) while those whose level of education matched the most commonly observed level for their occupation were categorized as correctly-matched employees. For financial managers, for instance, any schooling that is above (below) bachelor degree is considered to be over-education (under-education) and any schooling equal to a bachelor degree is considered to be a correct education-job match.[12]

Many individuals of interest who had no employment during the Census week were looking or available for work, or were waiting to be called back to a professional position from which they had been laid off. These people are assigned a category named "Unemployed." Similarly, individuals aged 25 to 64 who were not in the labour force during the survey week are regrouped in a category named "Not in the labour force." Much of our motivation for the empirical distinction between reported "Unemployed" and reported "Not in the labour force" comes from two facts. First, unemployed individuals are more likely to allocate a significant portion of their disposable time to job search while people not in the labour force are less likely to do so, everything else held equal. Second, Flinn and Heckman (1982) who show in the American context that unemployed and people not in the labour force are behaviourally distinguishable concluded that "it is not legitimate to aggregate the two states into a single nonemployment state when analyzing labour market dynamics."

A number of self-employed workers reported zero or negative employment income, making it difficult to compare their earnings outcomes. In addition, some individuals who are employees also identified themselves as originally self-employed. However, it is unknown whether they have stopped working for themselves or are continuing to do so while working as employees at the same time. As a result, it is difficult to determine what portion of their income is solely due to paid employment and what portion comes from their original self-employment activity, if they still engage in that activity. We therefore treat people who are currently self-employed or who were originally self-employed as a separate group.

Finally, many individuals held a paid job at the same time as they participated in the Canadian postsecondary education system. It is thus difficult to know whether these people were in fact employees or considered themselves to be students. Moreover, increased academic constraints may lead some students, especially full-time students, to either quit the workforce temporarily or significantly decrease their labour supply. Individuals who reported attending school in the nine months preceding the 2006 Census were therefore classified as 'school attendees.'

Overall, 66% of people with a postsecondary certificate, degree or diploma between the ages of 25 and 64 worked in the wage sector as employees; 11% were self-employed workers; 12% were school attendees; 11% are not in the labour force; and less than 1% were unemployed. (Table 2).

Table 2

Distribution of individuals with a postsecondary education aged 25 to 64, by labour force status, Canada 2006

	Individuals with a postsecondary education	
Labour force status	number	percent
Unemployed	73,610	0.71
Persons not in the labour force	1,165,370	11.18
Self-employed workers	1,116,597	10.71
Undereducated employees	1,025,835	9.84
Correctly matched employees	1,526,257	14.64
Overeducated employees	4,284,795	41.09
School attendees	1,235,674	11.85
All	**10,428,138**	**100.00**

Source: Author's calculations based on data from the 2006 Census of Population.

Finally, the 2006 Census contains 210 countries of graduation, some of which have very small cell counts.[13] Given that this information represents a key explanatory variable, we chose to focus the analysis on the locations of postsecondary study that make up just over 95% of the target population. The remaining countries, i.e., 5% of our target population, are all included in a generic category entitled "other countries."

Overall, 85% of postsecondary-educated individuals between ages 25 and 64 had completed their highest postsecondary degree in Canada; 2% completed their education in the United States; 1% in the United Kingdom; 1% in the Philippines; and 1% in India (Table 3).

Table 3

Distribution of individuals with a postsecondary education aged 25 to 64, by location of highest postsecondary study, Canada 2006

	Individuals with a postsecondary education	
Location of postsecondary study	number	percent
Canada	**8,874,213**	**85.10**
United States	214,121	2.05
United Kingdom	140,581	1.35
Philippines	132,733	1.27
India	137,966	1.32
China	121,756	1.17
Pakistan	46,428	0.45
Poland	46,252	0.44
France	40,695	0.39
South Korea	33,301	0.32
Romania	36,161	0.35
Hong Kong	30,810	0.30
Russia	30,580	0.29
Germany	24,126	0.23
Iran	24,685	0.24
Other countries[1]	493,728	4.73
All	**10,428,138**	**100.00**

1. Countries that make up less than 5% of the locations of postsecondary education reported in the 2006 Census.

Source: Author's calculations based on data from the 2006 Census of Population.

Our selection of locations of postsecondary study allows making accurate statistical inferences without having to artificially create broad categories, since any estimation bias can be exacerbated when estimates are based on aggregated rather than detailed data (Hanushek, 2003). The grouping of countries of postsecondary degree completion also assumes that all education systems present in the Canadian labour market are similar with respect to factors such as education costs, regulations, graduation requirements, labour laws, teacher certification and recruitment policies, which is not necessarily the case in practice (OECD, 2010; Black, Daniel and Smith, 2005; Hanushek, 2003). With regard to regulation, for example, the British and American postsecondary education systems are decentralized, while postsecondary education in continental Europe is more centralized (Black, Daniel and Smith, 2005). According to a 2007 report by Citizenship and Immigration Canada, China, India, the Philippines, Pakistan, the United States, Iran, the United Kingdom, South Korea and France were among the top ten sources of long-term immigrants in 2006. This confirms that our selection of countries of graduation is consistent with Canada's current long-term immigration picture.[14]

Chapter 5

Descriptive analysis

This chapter provides descriptive statistics comparing levels of postsecondary education and major field of study by location of study and immigration status. Next, we examine the distribution of the target population by location of postsecondary study, immigration status and labour force status. Finally, we briefly explore earnings differentials between immigrants and the Canadian-born, by immigrants' cohort and location of postsecondary study.

5.1 Education levels by location of postsecondary study and immigration status

The upper portion of Table 4 and its sections A, B and C show, in sequence, the percentage distribution of the Canadian-born, very-recent, recent and established immigrants with a postsecondary education in 2006 and aged 25 to 64, by university and non-university status.

In 2006, just over two out of five Canadian-born (41%) adults with a postsecondary education had a university degree, compared to almost all immigrants, especially very-recent and recent immigrants with a foreign postsecondary education. University education is particularly higher among those very-recent or recent immigrants with a postsecondary education from Eastern Europe (Poland, Romania), South Asia (India, Pakistan), East Asia (China, South Korea) and West Asia (Iran). The observed rise of education among immigrants with a postsecondary education is consistent with King (2009) who indicates that by 2006, 42% of immigrants who arrived between 2001 and 2006 had a university degree compared to 22% of immigrants who arrived prior to 2001, with only 16% among the Canadian-born.

This result is not surprising considering that Canada increasingly views postsecondary education as an accelerator of individual adaptation to the rapidly changing circumstances of its labour market.[15] For a number of years indeed, Canada has been anticipating a shortage of skilled labour as a combined result of retirement of baby boomers (i.e., those individuals born between 1946 and 1966) and low fertility rates in the general population. At the same time, the Canadian economy has been characterized by an acceleration of technological change, mainly driven by computerization and the growth of the knowledge-based economy (Ehrenberg and Smith, 2002). So as to best meet labour market needs, Canadian immigration policy became more selective and skilled-focused starting in the early 1980s (King, 2009; Picot, 2008; Kahn, 2004). For instance, changes were made in the selection policy in the early 2000s to allow applicants in the skilled worker class to earn 40% of the points required for acceptance in Canada for their educational attainment.[16]

Among prime-aged (25 to 64) individuals with a postsecondary education, the share of established immigrants who obtained their college/other degree in Canada, Poland, the special administrative region of Hong Kong or in the United Kingdom is similar to that for the Canadian-born (Table 4).

Table 4

Percentage distribution of individuals aged between 25 and 64 years who have completed postsecondary education, by immigration status, level of postsecondary education and location of postsecondary study, 2006

	Level of postsecondary education										
	Non-university			University							
Location of postsecondary study	Other[1]	College[2]	All	University certificate or diploma below bachelor level	Bachelor's degree	University certificate or diploma above bachelor level	Degree in medicine, dentistry, veterinary medicine or optometry	Master's degree	Earned doctorate	All	Total
	percent			percent							
Canadian-born	22.81	36.39	59.20	7.06	22.65	3.54	0.82	5.83	0.88	40.80	100.00
Very-recent immigrants[3]											
Canada	14.68	21.91	36.60	10.09	20.78	4.88	1.10	22.86	3.69	63.40	100.00
United States	4.45	9.59	14.04	6.45	28.62	4.16	1.22	35.35	10.15	85.96	100.00
United Kingdom	7.06	25.71	32.76	9.42	24.47	6.21	1.21	19.93	5.99	67.24	100.00
Philippines	3.27	11.40	14.67	15.98	55.81	7.21	2.05	4.01	0.27	85.33	100.00
India	2.71	7.47	10.18	11.14	42.04	8.37	2.14	24.35	1.78	89.82	100.00
China	1.79	10.52	12.31	15.51	51.10	2.75	1.41	14.30	2.63	87.69	100.00
Pakistan	1.70	8.37	10.07	9.75	38.94	6.75	4.55	29.65	0.28	89.93	100.00
Poland	16.33	23.81	40.14	7.78	10.18	2.24[E]	1.98[E]	34.24	3.45	59.87	100.00
France	8.55	15.75	24.30	10.56	13.88	9.04	1.01	32.00	9.20	75.70	100.00
South Korea	1.56	7.67	9.24	15.08	51.74	6.27	1.02	14.85	1.80	90.76	100.00
Romania	6.09	8.49	14.58	6.84	48.21	11.80	3.95	13.22	1.40	85.42	100.00
Hong Kong	17.49	25.44	42.93	23.11	16.93	4.33[E]	F	9.13	3.22[E]	57.10	100.00
Russia	1.83	9.97	11.80	7.13	26.26	12.82	5.29	29.96	6.74	88.20	100.00
Germany	16.82	25.04	41.86	5.86	10.40	6.21	1.63	21.37	12.68	58.14	100.00
Iran	4.82	5.64	10.46	9.39	51.49	3.96	5.54	15.40	3.77	89.54	100.00
Other countries[4]	8.32	16.74	25.06	12.29	34.66	8.55	3.02	14.19	2.23	74.94	100.00
Recent immigrants[5]											
Canada	14.58	28.49	43.07	11.72	22.82	3.79	1.04	14.19	3.37	56.93	100.00
United States	2.96	7.50	10.46	6.61	28.07	4.29	1.47	39.16	9.94	89.54	100.00
United Kingdom	8.07	24.56	32.63	11.07	23.46	5.46	1.27	17.83	8.28	67.37	100.00
Philippines	4.46	13.00	17.46	19.17	51.45	7.47	1.49	2.74	0.22	82.54	100.00
India	3.91	9.80	13.71	13.62	43.61	7.60	1.42	18.78	1.25	86.29	100.00
China	1.94	8.81	10.76	14.28	48.80	3.09	2.21	17.12	3.75	89.24	100.00
Pakistan	2.65	8.50	11.15	12.38	43.37	7.57	3.62	21.56	0.35[E]	88.85	100.00
Poland	21.24	32.49	53.73	12.40	5.03	3.25	0.92[E]	22.59	2.09	46.27	100.00
France	9.98	15.21	25.19	11.63	17.55	9.77	0.35[E]	21.59	13.92	74.81	100.00
South Korea	0.98	8.17	9.15	15.52	56.10	5.22	0.85[E]	11.89	1.26	90.85	100.00
Romania	8.02	9.28	17.31	6.06	33.20	18.89	2.26	20.88	1.42	82.69	100.00
Hong Kong	11.96	36.62	48.58	24.94	17.40	2.88	0.48[E]	4.88	0.83[E]	51.41	100.00
Russia	2.22	11.19	13.41	8.84	23.23	16.03	3.02	28.83	6.64	86.59	100.00
Germany	22.01	30.17	52.18	5.24	10.51	4.77	2.01[E]	14.90	10.38	47.81	100.00
Iran	6.80	7.08	13.89	9.80	51.93	3.38	5.00	14.06	1.94	86.11	100.00
Other countries[4]	10.04	20.88	30.92	12.41	32.01	7.40	2.51	12.05	2.71	69.08	100.00

Table 4 concluded

Percentage distribution of individuals aged between 25 and 64 years who have completed postsecondary education, by immigration status, level of postsecondary education and location of postsecondary study, 2006

Location of postsecondary study	Level of postsecondary education										
	Non-university			University							
	Other[1]	College[2]	All	University certificate or diploma below bachelor level	Bachelor's degree	University certificate or diploma above bachelor level	Degree in medicine, dentistry, veterinary medicine or optometry	Master's degree	Earned doctorate	All	Total
	percent			percent							
Established immigrants[6]											
Canada	18.44	33.76	**52.21**	9.67	23.63	3.89	1.36	7.38	1.87	**47.79**	100.00
United States	5.21	12.39	**17.60**	7.91	31.43	4.31	2.06	27.30	9.39	**82.40**	100.00
United Kingdom	16.45	41.02	**57.47**	11.56	14.95	3.74	2.02	6.33	3.83	**42.53**	100.00
Philippines	6.46	14.79	**21.25**	22.51	45.85	6.78	1.61	1.72	0.27	**78.75**	100.00
India	6.96	13.92	**20.88**	18.99	36.53	6.75	1.44	14.08	1.33	**79.12**	100.00
China	8.31	21.94	**30.25**	17.87	34.27	3.42	3.84	8.01	2.34	**69.75**	100.00
Pakistan	6.88	15.14	**22.01**	17.10	37.42	5.70	2.26	14.96	0.55[E]	**77.99**	100.00
Poland	20.03	35.57	**55.60**	7.21	7.38	2.60	1.53	23.66	2.02	**44.40**	100.00
France	22.31	23.60	**45.92**	11.81	13.18	5.74	1.33	13.83	8.19	**54.08**	100.00
South Korea	4.17	12.98	**17.16**	20.59	49.66	5.47	0.63[E]	5.88	0.61[E]	**82.84**	100.00
Romania	15.09	14.34	**29.43**	7.29	21.78	13.13	3.91	22.69	1.77	**70.57**	100.00
Hong Kong	13.05	37.83	**50.88**	23.90	17.43	3.06	0.66	3.85	0.22[E]	**49.12**	100.00
Russia	5.21	14.01	**19.22**	10.03	24.03	12.37	3.55	24.65	6.15	**80.78**	100.00
Germany	39.88	35.49	**75.37**	7.01	5.57	2.65	0.68	6.14	2.58	**24.63**	100.00
Iran	14.85	15.90	**30.75**	16.73	35.94	4.68	1.51[E]	9.04	1.34[E]	**69.25**	100.00
Other countries[4]	22.75	29.73	**52.49**	12.70	21.30	4.93	1.99	5.32	1.27	**47.51**	100.00

[E] use with caution

F too unreliable to be published

1. Other trades certificate or diploma or registered apprenticeship certificate.
2. College, CEGEP or other non-university certificate or diploma.
3. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
4. Countries that make up less than 5% of the locations of postsecondary education reported in the 2006 Census.
5. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
6. Established immigrants are individuals who have been landed immigrants for more than 10 years.

Source: Author's calculations based on data from the 2006 Census of Population.

It is also worth noting that established immigrants who studied in Germany have the highest proportion of non-university graduates compared to the Canadian-born (75% vs. 59%). In Germany, students who have completed the twelfth year of schooling can either study at university or enter technical colleges (Gruetter, 2005). This result could thus reflect an overrepresentation of holders of technical/other degrees among people with a German postsecondary education who immigrated to Canada more than a decade ago. Our descriptive results indicate that regardless of the duration of permanence residence in Canada, the share of immigrants with a postsecondary education who completed a college diploma in Canada, the United Kingdom, Poland, Hong Kong or Germany is closer to the share of the Canadian-born with a college diploma.

Table 4 also indicates that most immigrants with a postsecondary education who completed their highest level of education abroad had a bachelor's degree. However, over half of very-recent and recent immigrants who completed their postsecondary schooling in South Korea, Iran, China or Philippines are bachelor's degree holders. Likewise, half of established immigrants with a postsecondary certificate, degree or diploma obtained in South Korea belong to this educational category, while this is the case for 46% of established immigrants whose highest postsecondary credential was completed in the Philippines. Statistics reported in Table 4 reveal that the highest share of master's degree holders is observed for very-recent immigrants with a Polish or an American postsecondary education, and for recent and established immigrants who graduated in the United States. Conversely, very-recent and recent immigrants who graduated in France or Germany, and established immigrants with an American or a French postsecondary certificate, degree or diploma have the highest proportion of PhD holders.

5.2 Fields of study by location of postsecondary study and immigration status

The upper portion of Table 5 and its sections A, B and C report, in sequence, the percentage distribution of the Canadian-born, very-recent, recent and established immigrants with a postsecondary education in 2006 and aged 25 to 64, by major postsecondary field of study.

Relying on terminology often used in the empirical literature (Boudarbat and Chernoff, 2009; Krahn and Bowlby, 1999, to name few), fields of study are regrouped under three broad labels. Group I refers to the so-called "soft sciences" i.e., education, visual arts, humanities and social sciences. Group II refers to the so-called "hard sciences," including engineering, computer science, the life/physical sciences and health/welfare sciences. The remaining fields of study, i.e., business/administration, agriculture and other fields, are assigned to Group III. The following discussion focuses on some of the highlights of the information shown in Table 5.

Table 5

Percentage distribution of individuals aged between 25 and 64 years who have completed postsecondary education, by immigration cohort, field and location of postsecondary study, 2006

	Postsecondary fields of study				
	Group I				
	Education	Visual arts	Humanities	Social sciences	All
Location of postsecondary study	percent				
Canadian-born	**8.12**	**3.62**	**4.8**	**10.15**	**26.69**
Very-recent immigrants[1]					
Canada	3.01	3.37	4.30	9.67	**20.36**
United States	5.37	4.61	7.18	12.62	**29.78**
United Kingdom	3.97	4.54	4.25	9.89	**22.64**
Philippines	6.15	0.87	1.96	5.98	**14.95**
India	4.41	1.93	13.95	8.18	**28.47**
China	2.89	1.86	5.39	6.40	**16.54**
Pakistan	4.55	1.87	16.06	12.86	**35.34**
Poland	4.34^{E}	2.14^{E}	9.04	16.96	**32.48**
France	2.42	3.45	7.51	11.78	**25.16**
South Korea	7.77	10.02	12.98	11.93	**42.70**
Romania	2.59	1.19	4.47	12.23	**20.48**
Hong Kong	8.17^{E}	3.43^{E}	4.38^{E}	6.54^{E}	**22.52**
Russia	6.67	3.73	4.44	11.08	**25.91**
Germany	4.65^{E}	3.72^{E}	4.39^{E}	6.74	**19.50**
Iran	3.38	3.54	9.00	7.06	**22.97**
Other countries	5.58	3.14	6.03	11.61	**26.37**
Recent immigrants[2]					
Canada	3.21	3.17	3.32	8.98	**18.67**
United States	5.15	4.31	6.56	10.44	**26.47**
United Kingdom	3.70	3.54	4.54	7.22	**18.99**
Philippines	6.88	1.23	1.75	6.33	**16.19**
India	4.10	1.63	17.98	10.11	**33.81**
China	2.87	2.09	6.81	5.69	**17.46**
Pakistan	4.22	2.31	14.26	12.06	**32.85**
Poland	9.42	3.16^{E}	5.35^{E}	11.22	**29.15**
France	2.55^{E}	3.54	9.57	8.25	**23.91**
South Korea	7.81	10.35^{E}	11.80^{E}	11.97^{E}	**41.93**
Romania	1.14	1.35^{E}	2.60^{E}	5.61	**10.70**
Hong Kong	5.20	5.48	3.75^{E}	7.22	**21.65**
Russia	5.81	4.26	3.78	9.61	**23.47**
Germany	2.58	4.05^{E}	4.63^{E}	7.97^{E}	**19.23**
Iran	2.96	3.16^{E}	10.52	7.94	**24.58**
Other countries	5.76	3.39	6.50	10.91	**26.56**
Established immigrants[3]					
Canada	5.30	3.46	4.74	10.32	**23.83**
United States	11.20	6.24	11.65	11.67	**40.75**
United Kingdom	4.03	3.56	3.70	6.50	**17.80**
Philippines	8.16	1.34	2.53	6.76	**18.79**
India	6.85	2.45	22.52	13.69	**45.52**
China	5.03	4.13	8.89	5.76	**23.80**
Pakistan	6.64	1.94^{E}	18.41	17.26	**44.25**
Poland	5.17	3.33	4.45	11.18	**24.13**
France	3.64	4.68	10.53	9.30	**28.15**
South Korea	7.69	11.09	11.90	14.93	**45.61**
Romania	2.56	2.60	3.45	7.57	**16.17**
Hong Kong	8.16	4.61	5.77	7.71	**26.24**
Russia	7.32	5.36	4.71	8.13	**25.53**
Germany	3.09	3.86	2.92	8.85	**18.71**
Iran	5.53	3.56^{E}	9.10	12.19	**30.38**
Other countries	6.56	3.43	5.47	9.45	**24.90**

Table 5 continued

Percentage distribution of individuals aged between 25 and 64 years who have completed postsecondary education, by immigration cohort, field and location of postsecondary study, 2006

	Postsecondary fields of study				
	Group II				
	Life / physical sciences	Computer sciences	Engineering sciences	Health / welfare	All
Location of postsecondary study	percent				
Canadian-born	**2.77**	**4.04**	**21.54**	**13.71**	**42.07**
Very-recent immigrants[1]					
Canada	4.81	9.74	18.87	13.27	**46.69**
United States	5.64	10.10	16.41	8.51	**40.66**
United Kingdom	5.59	8.74	22.99	8.49	**45.81**
Philippines	1.95	4.76	25.81	21.71	**54.24**
India	10.62	6.37	20.68	8.30	**45.98**
China	6.37	11.10	38.17	7.42	**63.06**
Pakistan	8.83	9.11	16.97	9.49	**44.40**
Poland	5.03 E	5.16 E	24.63	9.72	**44.54**
France	7.99	9.44	18.81	7.12	**43.37**
South Korea	4.42	5.81	20.96	8.59	**39.77**
Romania	5.83	6.37	42.43	9.76	**64.39**
Hong Kong	2.96 E	4.86 E	20.69	3.62 E	**32.13**
Russia	7.76	7.86	37.07	11.14	**63.83**
Germany	8.02	5.29 E	30.60	9.01	**52.92**
Iran	7.81	7.00	34.29	15.55	**64.65**
Other countries	5.22	7.12	24.51	10.19	**47.04**
Recent immigrants[2]					
Canada	4.52	12.49	20.03	13.51	**50.54**
United States	6.36	10.69	18.43	7.49	**42.97**
United Kingdom	6.45	7.23	27.80	8.63	**50.11**
Philippines	2.40	4.22	23.97	20.43	**51.02**
India	9.49	5.05	21.40	6.16	**42.10**
China	7.59	11.43	37.27	9.24	**65.53**
Pakistan	10.38	6.63	23.66	8.30	**48.97**
Poland	3.61 E	1.70 E	30.87	11.54	**47.73**
France	8.82	10.80	19.18	4.49	**43.30**
South Korea	5.76 E	7.08 E	20.65	8.49	**41.99**
Romania	5.84	10.31	57.32	6.33	**79.80**
Hong Kong	2.20 E	4.34	17.77	6.38	**30.69**
Russia	9.04	9.85	40.46	7.86	**67.22**
Germany	6.35 E	2.51 E	31.83	13.25	**47.58**
Iran	7.10	5.17	33.04	15.37	**60.68**
Other countries	5.08	6.67	27.76	9.33	**48.84**
Established immigrants[3]					
Canada	3.93	7.39	21.72	13.25	**46.30**
United States	5.99	5.31	12.65	12.83	**36.78**
United Kingdom	4.45	3.52	33.51	14.37	**55.84**
Philippines	2.85	2.40	19.95	20.56	**45.76**
India	10.56	3.42	17.50	6.51	**37.99**
China	7.41	5.72	26.85	14.86	**54.84**
Pakistan	9.84	3.94	16.31	6.99	**37.09**
Poland	4.39	2.40	40.99	10.78	**58.56**
France	5.19	5.28	22.40	7.21	**40.07**
South Korea	4.43	3.73	17.53	10.16	**35.84**
Romania	5.02	4.68	54.44	8.69	**72.84**
Hong Kong	2.13	3.43	18.47	9.99	**34.02**
Russia	7.14	6.86	39.41	10.02	**63.44**
Germany	2.46	1.17 E	31.16	10.73	**45.53**
Iran	6.28	3.71	25.21	12.93	**48.13**
Other countries	3.86	3.24	30.09	9.73	**46.91**

Table 5 continued

Percentage distribution of individuals aged between 25 and 64 years who have completed postsecondary education, by immigration cohort, field and location of postsecondary study, 2006

	Postsecondary fields of study				
	Group III				
	Business / administration	Agriculture	Other	All	Total
Location of postsecondary study	percent				
Canadian-born	22.2	2.45	6.59	31.24	100
Very-recent immigrants[1]					
Canada	26.77	1.44	4.74	32.95	167.00
United States	26.24	1.50	1.82	29.56	170.00
United Kingdom	25.36	2.44	3.75	31.54	100.00
Philippines	26.84	1.99	1.98	30.80	100.00
India	23.41	1.50	0.65	25.55	100.00
China	18.46	1.17	0.76	20.40	100.00
Pakistan	18.01	1.94	0.30 E	20.26	100.00
Poland	16.58	2.92 E	3.48 E	22.98	100.00
France	25.81	2.39	3.27	31.48	100.00
South Korea	13.76	2.45	1.31	17.53	100.00
Romania	11.40	1.87	1.87	15.13	100.00
Hong Kong	42.86	F	2.39 E	45.35	100.00
Russia	7.30	1.19 E	1.77 E	10.26	100.00
Germany	17.98	5.18 E	4.43 E	27.59	100.00
Iran	8.67	2.11 E	1.60 E	12.38	100.00
Other countries	21.53	2.58	2.48	26.59	100.00
Recent immigrants[2]					
Canada	24.97	1.06	4.76	30.79	100.00
United States	27.28	1.92	1.36	30.56	100.00
United Kingdom	24.50	3.03	3.37	30.90	100.00
Philippines	29.38	1.75	1.66	32.78	100.00
India	21.96	1.08	1.04	24.09	100.00
China	15.02	1.14	0.85	17.01	100.00
Pakistan	16.10	1.21 E	0.87 E	18.18	100.00
Poland	11.57	6.41 E	5.14 E	23.12	100.00
France	25.26	2.53 E	4.99	32.78	100.00
South Korea	12.34	2.27 E	1.47 E	16.08	100.00
Romania	5.78	1.12 E	2.59 E	9.49	100.00
Hong Kong	44.96	F	2.24 E	47.66	100.00
Russia	5.13	1.24 E	2.94	9.31	100.00
Germany	15.06	5.18 E	6.59	26.83	100.00
Iran	10.64	2.03 E	2.08 E	14.75	100.00
Other countries	19.07	2.56	2.96	24.60	100.00

Table 5 concluded

Percentage distribution of individuals aged between 25 and 64 years who have completed postsecondary education, by immigration cohort, field and location of postsecondary study, 2006

	Postsecondary fields of study				
	Group III				
	Business / administration	Agriculture	Other	All	Total
Location of postsecondary study	percent				
Established immigrants[3]					
Canada	23.42	1.17	5.29	**29.87**	**100.00**
United States	18.40	1.71	2.35	**22.47**	**100.00**
United Kingdom	19.75	1.72	4.89	**26.36**	**100.00**
Philippines	31.78	1.90	1.76	**35.44**	**100.00**
India	13.97	1.29	1.23	**16.49**	**100.00**
China	17.20	1.38^{E}	2.77	**21.35**	**100.00**
Pakistan	16.71	0.88^{E}	1.08^{E}	**18.67**	**100.00**
Poland	7.55	5.18	4.59	**17.32**	**100.00**
France	19.85	2.52	9.41	**31.78**	**100.00**
South Korea	13.33	2.87	2.34^{E}	**18.55**	**100.00**
Romania	6.35	1.11^{E}	3.53	**10.99**	**100.00**
Hong Kong	36.40	0.17^{E}	3.17	**39.74**	**100.00**
Russia	6.54	1.62^{E}	2.87^{E}	**11.03**	**100.00**
Germany	23.37	4.14	8.26	**35.76**	**100.00**
Iran	16.93	1.41^{E}	3.15^{E}	**21.49**	**100.00**
Other countries	20.69	2.75	4.74	**28.18**	**100.00**

^{E} use with caution

F too unreliable to be published

1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

Source: Author's calculations based on data from the 2006 Census of Population.

Data from the 2006 Census show that more than two-fifths (42%) of the Canadian born aged 25 to 64 with postsecondary credentials had graduated in the so-called "hard sciences," i.e., engineering (21%), the computer sciences (4%), the life/physical sciences (3%) and the health/welfare sciences (14%) (Table 5). Another 27% had graduated in the "soft sciences", i.e., education (8%), visual arts (4%), humanities (5%) or the social sciences (10%). Finally, in 2006, 22% of the Canadian-born whose highest level of education was postsecondary had graduated with postsecondary credentials in business or administration.

In contrast, close to two-thirds of very-recent immigrants who completed their highest postsecondary credential in China (63%), Romania (64%), Russia (64%) or Iran (65%), and more than half of those who completed their postsecondary studies in the Philippines (54%) and Germany (53%) had credentials in the "hard sciences." This was true for only 32% of very-recent immigrants whose highest education was completed in the special administrative region of Hong Kong and 47% of those with a Canadian postsecondary certificate, degree or diploma. Meanwhile, over two-fifths (43%) of very-recent immigrants who completed their postsecondary education in South Korea, 33% of those who completed their studies in Poland and 35% of those who completed their education in Pakistan had credentials in the "soft sciences." It is worth noting that among very-recent immigrants with a postsecondary education, those who completed their studies in China and in the Philippines had the lowest shares of credentials in the "soft sciences," at 15% and 17%, respectively. Very-recent immigrants who completed their postsecondary education in the special administrative region of Hong Kong had the highest share of credentials in business and administration fields of study (43%), whereas those who completed their studies in Iran or Russia had the lowest shares with credentials in business and administration, at 9% and 7%, respectively.

Although different in terms of magnitude, the distribution of recent immigrants aged 25 to 64 with a postsecondary education by field of study is qualitatively similar to that observed for very-recent immigrants (Table 5). For instance, recent immigrants who completed their postsecondary studies in Romania, Russia, Iran or China had the largest shares of graduates in the "hard sciences." In contrast, recent immigrants who completed their highest postsecondary credential in Hong Kong had the smallest share of graduates in the "hard sciences," at 31%, but the largest share in business and administration, at 45%. Unlike very-recent immigrants with a postsecondary education, the smallest share in business and administration is observed for recent immigrants who completed their postsecondary schooling in Romania, at 11%. Recent immigrants who completed their postsecondary studies in South Korea had the highest share of graduates in the "soft sciences," at 42%.

Data from the 2006 Census reveal that among immigrants with a Romanian postsecondary education who studied "hard sciences," the share of recent immigrants is 16% higher than that for very-recent immigrants. Furthermore, over half of recent immigrants with a Romanian postsecondary education (57%) studied engineering compared to 42% of very-recent immigrants who completed their postsecondary studies in Romania. These results are worth discussing. Enrolment in vocational and technical programs among full-time students was remarkably high from 1950 to 1980 in Central and Eastern Europe (Malamud and Pop-Eleches, 2008). It could thus be that the focus on vocational and technical training in Romania some decades ago has produced a high combined share of graduates in engineering, computer, the life/physical and the health/welfare sciences.

The recent transition of Romania from planned economy to market economy and its entry into the European Union have been associated with significant technological and institutional changes.[17] These factors could have contributed to making vocational and technical education highly valuable in the Romanian labour market. In turn, the substantial increase in the market price of vocational and technical skills acquired through the national education system could have determined at least in part the significant shift in the distribution of fields of study among applicants of the economic class with Romanian postsecondary education, all else held equal.

Finally, over half of established immigrants who completed their studies in the United Kingdom, China, Poland, Romania or Russia had credentials in the "hard sciences." Compared to other countries, established immigrants with a postsecondary credential from South Korea and India had the largest shares of graduates in the "soft sciences," both at 46%, while those who completed their studies in Hong Kong had the largest share in business and administration, at 40%. Finally, it is worth noting that 41% of established immigrants who completed their highest postsecondary credential in the United States had done so in the "soft sciences," whereas this was the case for only about 30% of very-recent immigrants and 26% of recent immigrant who completed their studies in the United States.

Overall, our descriptive results show that the distribution of postsecondary fields of study among people aged 25 to 64 with a postsecondary education is heterogeneous, regardless of the duration of permanent residence and immigration status. We also note that compared to their immigrants counterparts, the Canadian-born with a postsecondary education have neither remarkably high/low shares in the "hard sciences," nor do they have remarkably high/low shares in the "soft sciences." This result is not surprising given that the Canada's federal selection policy does not allow applicants to earn points required for acceptance in Canada for their major field of study (Sweetman and McBride, 2004). In fact, Quebec and British Columbia are currently the only Canadian provinces where individuals who want to enter Canada under the Skilled Workers Program are assigned bonus points for fields with a higher value in the local labour markets.[18] However, our descriptive statistics show intra-group variations in the distribution of postsecondary fields of study among individual members of same immigration cohorts.

5.3 Labour force status, by location of study and immigration status

Table 6 shows the percentage distribution of Canada's 25 to 64 year-olds with a postsecondary education in 2006, by location of postsecondary study, immigration status and labour force status.

Slightly more than two out of three (68%) of the Canadian-born were paid employees. Higher wage employment is also observed for almost all immigrants, corroborating prior Canadian empirical research which suggests that postsecondary education increasingly plays a crucial role in the allocation process of paid employment (see for example, Ferrer, Green and Riddell, 2006; Hansen, 2006; Sweetman, 2004). However, the share for the Canadian-born was higher than that for almost all very-recent immigrants regardless of the location of study, and far better than that for very-recent immigrants who completed their studies in Iran or South Korea.

The observed gap in wage employment between the Canadian-born and very-recent immigrants could possibly reflect problems arising in the early years of settlement in a new country including the non-recognition of foreign qualifications and work experience, difficulties associated with living in a foreign country, and poor mastery of host country official language(s) (Liebig, 2007). It could also be that a sizeable number of newcomers are upgrading their skills and are therefore not in the wage sector. Interestingly, we observe that the Canadian-born are also far more likely than many recent and established immigrants with a foreign postsecondary education, especially those with a South Korean postsecondary degree, to work in the wage sector. Thus, it may be possible that differences in postsecondary credentials obtained in different countries account for an important part of the variation in rates of employment in the wage sector observed when comparing the Canadian-born and landed immigrants.

Compared to other immigrant groups, the pattern of employment in the wage sector was quite different for recent immigrants whose highest postsecondary education was obtained in Romania or the Philippines, in which case the wage employment ratios were slightly higher than those for the Canadian-born, at 71% and 75%, respectively. We also observe that recent immigrants who completed their postsecondary education in France, the United Kingdom or India and established immigrants who completed their postsecondary education in Poland or Romania had employment ratios similar to the Canadian-born. Among established immigrants, however, only those who completed their studies in the Philippines, at 74%, had a wage employment ratio greater than that observed for the Canadian-born.

The fact that the wage employment ratios of immigrants who completed their highest postsecondary education in the Philippines surpass those of the Canadian-born individuals compared to immigrants with a postsecondary degree from Pakistan, Iran or South Korea could be at least in part related to the international transferability of skills acquired through schooling, along with other labour market characteristics.[19] For instance, it could be that in comparison with immigrants who graduated in Iran, Pakistan or South Korea, those with a postsecondary education from the Philippines have acquired other skills through their training that have characteristics similar to some Canada-specific skills. This in turn could make them more successful on Canada's labour market compared to immigrants educated in foreign countries such as Pakistan, Iran and South Korea.

Table 6

Percentage distribution of individuals aged between 25 and 64 years who have completed postsecondary education, by labour market status, immigration status and location of postsecondary study, 2005

	Non-wage sector			Wage-sector employees					
Location of post-secondary study	Un-employed	Out of labour market	Self-employed	Under-educated	Correctly matched	Over-educated	All	Students[1]	Total
	percent								
Canadian-born	**0.52**	**10.33**	**10.33**	**10.96**	**15.81**	**40.88**	**67.65**	**11.18**	**100.00**
Very-recent immigrants[2]									
Canada	1.51	10.05	5.17	3.89	7.59	31.64	**43.12**	40.15	**100.00**
United States	1.56	21.20	11.36	3.03	11.95	36.56	**51.54**	14.34	**100.00**
United Kingdom	1.20	17.76	12.44	6.22	10.77	39.91	**56.90**	11.70	**100.00**
Philippines	1.50	15.39	2.16	1.49	5.72	57.63	**64.83**	16.12	**100.00**
India	2.62	15.43	6.23	1.49	6.41	52.89	**60.80**	14.92	**100.00**
China	2.23	17.52	6.99	1.27	7.71	35.75	**44.72**	28.54	**100.00**
Pakistan	2.63	29.47	7.72	0.80	4.16	38.20	**43.16**	17.02	**100.00**
Poland	2.82	18.81	8.48	2.30^{E}	2.73	43.81	**46.54**	21.05	**100.00**
France	2.00	14.83	8.74	5.33	7.04	43.80	**56.17**	18.27	**100.00**
South Korea	3.93	30.28	21.98	1.42	4.01	23.20	**28.63**	15.18	**100.00**
Romania	1.71	12.71	5.83	1.38	8.50	40.56	**50.45**	29.29	**100.00**
Hong Kong	2.19	31.50	8.33	4.48^{E}	6.44^{E}	32.92	**32.92**	14.15	**100.00**
Russia	2.25	14.22	11.35	0.84^{E}	4.93	42.68	**47.61**	23.73	**100.00**
Germany	2.30	21.70	14.67	2.97	6.09	40.12	**49.18**	12.16	**100.00**
Iran	3.11	21.87	8.68	1.05	7.64	26.29	**34.98**	31.35	**100.00**
Other countries[3]	3.57	19.10	7.57	2.15	6.05	35.63	**43.83**	25.93	**100.00**

Table 6 concluded

Percentage distribution of individuals aged between 25 and 64 years who have completed postsecondary education, by labour market status, immigration status and location of postsecondary study, 2005

Location of post-secondary study	Non-wage sector			Wage-sector employees					
	Un-employed	Out of labour market	Self-employed	Under-educated	Correctly matched	Over-educated	All	Students[1]	Total
	percent								
Recent immigrants[4]									
Canada	1.07	7.36	7.05	6.17	11.39	40.78	**58.34**	26.17	**100.00**
United States	0.99	12.66	14.09	4.08	13.00	44.50	**61.58**	10.69	**100.00**
United Kingdom	0.50[E]	10.79	14.31	7.55	13.03	45.35	**65.93**	8.47	**100.00**
Philippines	0.64	7.63	3.47	1.78	7.23	66.14	**75.15**	13.11	**100.00**
India	1.10	10.78	10.24	2.33	9.37	54.87	**66.56**	11.32	**100.00**
China	1.39	12.07	13.20	2.22	13.34	44.28	**59.84**	13.50	**100.00**
Pakistan	1.73	20.77	12.29	1.41	7.86	44.55	**53.82**	11.39	**100.00**
Poland	F	14.85	14.87	4.46	4.15[E]	50.99	**55.45**	10.10	**100.00**
France	1.07	6.07	13.28	5.94	8.02	54.46	**68.41**	11.17	**100.00**
South Korea	2.66	20.84	34.40	1.55	6.02	26.50	**34.06**	8.04	**100.00**
Romania	0.81	4.95	9.11	2.94	15.13	52.63	**70.70**	14.44	**100.00**
Hong Kong	2.21	21.81	12.93	8.30	6.34	40.44	**55.08**	7.97	**100.00**
Russia	1.66	8.28	15.00	2.12	6.33	53.76	**62.21**	12.85	**100.00**
Germany	0.91	11.49	24.32	4.45	7.56	42.41	**54.42**	8.86	**100.00**
Iran	1.15	16.21	15.33	2.04	12.32	34.70	**49.05**	18.26	**100.00**
Other countries[3]	1.78	14.98	12.53	3.88	9.04	44.93	**57.85**	12.86	**100.00**
Established immigrants[5]									
Canada	0.82	10.81	11.84	10.01	14.51	39.64	**64.16**	12.37	**100.00**
United States	0.56	15.32	17.45	4.90	15.81	38.16	**58.86**	7.81	**100.00**
United Kingdom	0.47	17.09	16.10	10.84	11.62	38.88	**61.34**	5.00	**100.00**
Philippines	0.63	12.41	4.79	2.84	7.61	63.25	**73.70**	8.47	**100.00**
India	0.88	13.88	14.27	3.34	6.57	54.01	**63.92**	7.05	**100.00**
China	1.03	17.38	17.11	4.54	8.76	44.12	**57.42**	7.06	**100.00**
Pakistan	1.51	24.59	14.52	3.05	6.28	42.55	**51.88**	7.50	**100.00**
Poland	0.68	12.58	15.94	5.54	4.95	54.99	**65.49**	5.32	**100.00**
France	0.92	15.52	18.87	7.43	7.63	42.19	**57.25**	7.45	**100.00**
South Korea	1.55[E]	23.46	36.37	2.93	5.97	24.01	**32.91**	5.71	**100.00**
Romania	1.26	10.45	14.97	3.97	10.36	52.15	**66.49**	6.83	**100.00**
Hong Kong	0.95	21.51	13.60	10.70	7.89	38.44	**57.03**	6.91	**100.00**
Russia	1.77	12.90	19.41	3.19	6.16	49.55	**58.90**	7.03	**100.00**
Germany	0.82	24.62	22.71	6.79	4.43	35.82	**47.04**	4.81	**100.00**
Iran	2.55	19.09	21.77	3.16	6.50	37.88	**47.54**	9.05	**100.00**
Other countiries[3]	1.27	17.97	16.36	5.87	8.03	43.74	**57.65**	6.76	**100.00**

[E] use with caution

F too unreliable to be published

1. Attended school at some time in the nine-month period between September 2005 and Census Day, May 16, 2006.
2. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
3. Countries that make up less than 5% of the locations of postsecondary education reported in the 2006 Census.
4. Recent immigrants are individuals who have been landed immigrants to Canada from 5 to 10 years.
5. Established immigrants are individuals who have been landed immigrants for more than 10 years.

Source: Author's calculations based on data from the 2006 Census of Population.

Data from the 2006 Census show that most wage-sector workers with a postsecondary education and between 25 and 64 years of age are overeducated (Table 6). But, immigrants, especially very-recent immigrants, have much higher rates of over education than the Canadian-born. Rates of over-education among very-recent immigrants with a postsecondary certificate, degree or diploma from the Philippines or India are particularly worth highlighting. More than half of very-recent immigrants who received their postsecondary education in the Philippines (58%) or India (53%) are overeducated employees, compared with just 41% of the Canadian-born.

Gilmore and Le Petit (2008) cite information from the Southeast Asian Ministers of Education Organization (SEAMEO) that observes that the Philippines's education system is similar to that of North American in terms of factors such as the education structure, the content of the curricula, general/ vocational orientations, with a strong English component. Also, several components of India's educational system reflect the British educational system, while English is one of India's official languages.[20] It could therefore be that both international skills transferability and quality of knowledge of at least one of Canada's official languages are not the only factors behind the observed gap in wage employment between some internationally-educated immigrants and the Canadian-born. Instead, as suggested by authors such as Chiswick and Miller (2008) and Junankar, Paul and Yasmeen (2004), this gap could also reflect subjective barriers to many professional occupations and many other unobserved factors.

Other labour force statuses have also interesting patterns. For instance, self-employment is particularly greater among immigrants holding a South Korean postsecondary certificate, diploma or degree, irrespective of the immigration cohort. Further, slightly less than one third of very-recent immigrants who completed their postsecondary education in South Korea (30%), the Hong Kong Special Administrative Region (31%) or Pakistan (30%) was not in the labour force, while this was the case for just 10% of the Canadian-born. Likewise, very-recent immigrants who finished their postsecondary studies in Iran, Germany, the United States, Poland or China outnumber the Canadian-born among individuals not in the labour force. In contrast, the proportion of very-recent immigrants with a Canadian postsecondary education who are not in the labour force is similar to that of the Canadian-born.

Data not controlled for interaction effects (Table 6) also indicate that all immigrants with a foreign postsecondary education aged 25 to 64, especially from South Korea, have higher unemployment rates than the Canadian-born, irrespective of the immigration cohort. As noted previously, one implication of this result is that when prospective employers who use education to assess potential productivity have a choice between individuals educated in the home country and those who completed their education in another country, they will choose the former (see, for example, Chiswick and Miller, 2008; 2009; Chiswick, 1978).

Another result worth noting is that rates of school attendance were much higher for almost all recent-immigrant groups compared to the Canadian-born, which stood at 11%; these rates were especially high for very-recent immigrants (40%) and recent immigrants (26%) who already had postsecondary credentials acquired in Canada. About two out of five (40%) very-recent immigrants with a Canadian postsecondary education were attending school.

Three reasons make this last result worth discussing. First, our sample was restricted to men and women aged 25 to 64 so as to guarantee a focus on people likely to have completed their formal schooling. Second, the available evidence indicates that Canadian-educated immigrants have higher rates of employment and better earnings than almost all internationally-educated immigrants (see, for instance, Plante, 2010; Gilmore and Le Petit, 2008; Mata, 2008). In other words, Canada-educated immigrants may face no or a smaller initial loss in earnings or employment status, in comparison with foreign-educated immigrants. Last but not least, in comparison with Canada-educated immigrants, many internationally-educated immigrants need to either improve their language proficiency or have their degrees re-accredited or updated with Canadian degree requirements. Data not reported here indicate that as of 2006, two-thirds of very-recent immigrants with a Canadian postsecondary education and identified as school attendees were aged 25 to 34, while this was the case for only 48% of the Canadian-born with postsecondary schooling who reported school attendance on a part-time or full-time basis. Given that most very-recent immigrants with a Canadian postsecondary education are very young compared to the Canadian-born, it could be that they are undertaking graduate studies in Canada.

School attendance rates are also relatively high for very-recent immigrants who completed their postsecondary education in China (28%), Romania (29%), Russia (24%) and Iran (31%). Higher school attendance rates among these internationally-educated immigrants may reflect the less-than-perfect transferability of some key productive attributes (including education) between labour markets. Many very-recent immigrants who are attending school may choose to acquire Canada-specific skills in order to have Canadian credentials, improving their prospects in the Canadian labour market. It is worth noting that: (i) China, Romania, Russia and Iran are source countries where Canada's official languages (i.e., French and English) are not commonly spoken; and (ii) prior empirical studies have linked the labour market success of immigrants to quality of official languages knowledge (Thomas, 2009; Pendakur and Pendakur, 2002a; to name few). Therefore, it could be that some very-recent immigrants who completed their postsecondary studies in China, Romania, Russia and Iran are acquiring language skills.

5.4 Employment earnings differentials between the Canadian-born and immigrants

Table 7 shows percentage differences between the mean earnings of immigrants with a postsecondary education aged 25 to 64, who completed their studies abroad/in Canada and their Canadian-born counterparts. Columns 3 through 6 look at undereducated, correctly-matched, overeducated and all paid employees, respectively. An immediate difference is obvious: the Canadian-born have a wage advantage over almost all immigrants, especially over very-recent immigrants. When considering all paid employees, we note that very-recent immigrants who completed their postsecondary education in the United Kingdom are the only ones in this cohort who enjoy, on average, a slight earnings premium (+4%) relative to the Canadian-born.

Table 7

Average wage differential between immigrants and the Canadian-born, 25 to 64 year-olds with a postsecondary education, by immigrant cohort and location of postsecondary study, 2006

	Average wage difference[1]			
	Under-educated employees	Correctly matched employees	Over-educated employees	All employees
Location of postsecondary study	percent			
Very-recent immigrants[2]				
Canada	-57.67	-42.15	-41.03	-48.07
United States	-18.18	5.88	0.20	-1.14
United Kingdom	17.12	7.31	3.57	3.76
Philippines	-55.93	-69.06	-86.42	-89.43
India	-54.45	-48.08	-90.10	-86.19
China	-145.76	-78.38	-109.42	-112.82
Pakistan	-109.46	-62.37	-137.99	-142.93
Poland	-79.45	-119.21	-51.93	-72.24
France	-78.08	-50.64	-29.64	-44.56
South Korea	-118.47	-68.51	-101.42	-106.98
Romania	-93.85	-62.38	-62.52	-72.02
Hong Kong	-71.11	-95.41	-105.34	-107.98
Russia	-91.43	-57.56	-55.43	-69.44
Germany	-5.74	-17.44	-23.48	-28.88
Iran	-89.71	-74.87	-94.51	-94.52
Others[3]	-53.83	-45.30	-74.99	-77.68
Recent immigrants[4]				
Canada	-36.80	-35.07	-26.02	-32.75
United States	-3.68	20.89	19.35	16.17
United Kingdom	42.11	23.93	21.66	23.82
Philippines	-42.41	-25.27	-33.80	-44.12
India	-18.95	-11.21	-31.39	-34.56
China	-34.92	-24.80	-28.71	-31.56
Pakistan	-41.66	-19.36	-54.67	-55.06
Poland	-49.58	-26.98	-38.78	-50.16
France	-24.77	-17.00	7.20	-4.56
South Korea	-39.56	-25.79	-60.81	-56.89
Romania	-21.50	-6.68	12.27	5.65
Hong Kong	-52.13	-27.87	-59.65	-58.85
Russia	-18.67	-34.75	-5.61	-24.05
Germany	-32.33	2.52	5.74	-4.11
Iran	-45.82	-19.02	-40.10	-40.79
Others[3]	-25.12	-14.98	-28.26	-37.38

Table 7 concluded

Average wage differential between immigrants and the Canadian-born, 25 to 64 year-olds with a postsecondary education, by immigrant cohort and location of postsecondary study, 2006

	Average wage difference[1]			
	Under-educated employees	Correctly matched employees	Over-educated employees	All employees
Location of postsecondary study	percent			
Established immigrants[5]				
Canada	0.96	4.49	5.42	4.05
United States	11.11	19.71	27.26	23.30
United Kingdom	26.53	28.23	25.55	25.30
Philippines	-18.80	-14.22	-20.35	-28.75
India	-8.89	5.79	-14.36	-19.11
China	-11.88	-21.68	-31.28	-33.50
Pakistan	-19.09	-4.34	-25.91	-29.42
Poland	-9.83	0.01	-2.35	-11.00
France	-7.06	15.41	12.73	8.74
South Korea	-59.97	-23.65	-50.35	-48.84
Romania	-13.39	-0.26	16.74	7.57
Hong Kong	-8.09	-8.23	-20.59	-19.87
Russia	-5.65	-27.07	5.04	-6.48
Germany	-8.69	-0.66	-5.61	-11.83
Iran	-34.83	-15.50	-23.66	-29.99
Others[3]	-1.00	6.26	-7.28	-8.90

1. For each category, the relative variation indicates the percentage difference in average annual earnings between immigrants who graduated in country i and the Canadian-born. Mean annual earnings of the Canadian-born in 2006 were: $51,753 in the total wage sector; $55,779 for undereducated employees; $64,841 for correctly-matched employees; and $45,612 for overeducated employees.
2. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
3. Countries that make up less than 5% of the locations of postsecondary education reported in the 2006 Census.
4. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
5. Established immigrants are individuals who have been landed immigrants for more than 10 years.

Source: Author's calculations based on data from the 2006 Census of Population.

Conversely, those who lag the farthest behind the Canadian-born with respect to mean earnings were those who completed their postsecondary education in Pakistan (-143%). As has been previously suggested by authors such as Chiswick (1978) and Chiswick and Miller (2008; 2009) for the U.S., it could be that postsecondary education acquired in foreign countries other than the United Kingdom, especially in Pakistan, does not fully compensate for the lack of Canadian training in Canada's labour markets. The wage penalty experienced by very-recent immigrants who completed their postsecondary schooling in the special administrative region of Hong Kong is significantly higher than that for those with an American postsecondary certificate, degree or diploma (-108% vs. -1.14%).

This finding is counterintuitive because Hong Kong's education system, though initially modelled on the United Kingdom's education system, has recently become more similar to the American education system in terms of curricula, orientations, formal and informal aspects of education (Heywood and Wei, 2004). Part of the explanation for such an unexpected result lays in Tables 4 and 5. According to Table 4, nearly three out of five (58%) very-recent immigrants who completed their highest postsecondary education in the special administrative region of Hong Kong had a university-level education, while this was the case for 86% of those who completed their postsecondary education in the United States.

Furthermore, Table 5 indicates that among very-recent immigrants, those trained in the special administrative region of Hong Kong had the smallest combined share of postsecondary graduates in the "hard sciences," at 32%).

According to the research, fields of study affect the match between jobs and required skills and qualifications (see, for instance, Boudarbat and Chernoff, 2009). Furthermore, graduates from the natural sciences and engineering have, on average, higher income, earnings and employment rates than their peers in fields such as the humanities or social sciences (see, for instance, Sweetman and McBride, 2004). Arguably, therefore, it could be that, on average, very-recent immigrants with a postsecondary credential completed in Hong Kong secured paid employment in less lucrative occupations compared to very-recent immigrants with an American postsecondary education.

The magnitude of immigrants' earnings disadvantage vis-à-vis the Canadian-born decreases with the duration of residence, reinforcing the argument that the length of time spent in Canada assists immigrants in acquiring skills relevant to Canadian jobs.

However, some variations in the gaps in earnings between recent immigrants from different locations of study and the Canadian-born are worth noting. In comparison with the Canadian-born, for instance, recent immigrants who completed their postsecondary studies in the Hong Kong special administrative region had the largest earnings disadvantage (-59%), while recent immigrants with an American or a British postsecondary education earned substantially more than the Canadian-born in 2006 (+17% and +24%, respectively). Among established immigrants, those with the largest earnings gap compared to the Canadian-born had completed their postsecondary education in South Korea (-49%). In contrast, established immigrants who were educated in the United States (+24%), the United Kingdom (+25.4%) and France (+7%) had positive earnings premium over the Canadian-born.

Examination of the distribution of average earnings differentials between the Canadian-born and immigrants by education-job match level and location of postsecondary study confirms a number of findings concerning wage-sector employees overall. It also highlights many important differences.

Concerning overeducated employees, for instance, Table 7 indicates that very-recent immigrants who completed their postsecondary education in Pakistan, recent immigrants who completed their postsecondary education in South Korea or the special administrative region of Hong Kong, and established immigrants who completed their postsecondary education in South Korea have the largest earnings gap relative to the Canadian-born. Conversely, very-recent immigrant who completed their postsecondary education in the United Kingdom, recent immigrants who completed their postsecondary studies in the United Kingdom, the United States, France or Germany, and established immigrants who completed their postsecondary education in Canada, the United States, the United Kingdom, France, Romania or Russian had positive earnings premiums over the Canadian-born.

Regarding correctly-matched employees, larger earnings gaps relative to the Canadian-born with a postsecondary education are observed for very-recent immigrants who completed their postsecondary education in Poland, recent immigrants who completed their postsecondary education in Canada or Russia and established immigrants who completed their education in Russia. In contrast, earnings premiums over the Canadian-born are noted for very-recent immigrants who completed their postsecondary education in the United Kingdom or the United States, recent immigrants who completed their postsecondary education in the United States, the United Kingdom or Germany, and established immigrants who completed their postsecondary education in Canada, the United States, the United Kingdom, India or France. The existence of a comparative earnings disadvantage for recent immigrants with a postsecondary education completed in Canada suggests at least in part that the accumulation of skills through the Canadian postsecondary education system does not necessarily translate into higher earnings for everyone over time. Put differently, it may be that individual investments in Canada-specific educational credentials are not themselves the engine of successful labour market adjustment of immigrants to Canada.

Regarding undereducated employees, Table 7 shows that very-recent immigrants with a postsecondary education completed in China, recent immigrants who graduated in the special administrative region of Hong Kong and established immigrants who graduated in South Korea lag far behind the Canadian-born in terms of employment earnings. In contrast, very-recent and recent immigrants who completed their studies in the United Kingdom and established immigrants who completed their studies in the United Kingdom and the United States had higher earnings than their Canadian-born counterparts.

While the analysis reported in this chapter does not control for interaction effects, it suggests that observed differences in the labour market outcomes of internationally-educated immigrants relative to the Canadian-born are likely due, at least in part, to variations across countries in skills transferability and/or credential recognition. The following chapter investigates this hypothesis from a multivariate perspective by simultaneously accounting for the influence of several factors often identified in the literature as being key determinants of employment status and earnings.

Chapter 6

Empirical strategies

Although very useful for analysis, descriptive statistics examined in the previous chapter are not adjusted for differences in key determinants of labour market success, such as labour market experience, field of study, occupation, language skills, province of residence, and so on. By ignoring labour market experience or language skills, for instance, we might mistakenly suggest that labour force status and wage earnings of landed immigrants are more sensitive to location of study than they really are.

A multivariate analysis allows us to measure the sensitivity of earnings, employment and education-job match rates to location of study while simultaneously taking into account several determinants of labour market success in Canada. This chapter presents the empirical specifications used for labour force status (section 6.1) and employment earnings (section 6.2).

6.1 Labour force status

In order to estimate the relative effect that location of postsecondary study has on labour market success of internationally-educated immigrants, we start by assuming that each individual faces seven mutually exclusive labour force statuses, namely: unemployed, not in the labour force, self-employed, undereducated employee, correctly-matched employee, overeducated employee and school attendee. The individual chooses the alternative that maximizes the present value of his/her benefits given observed attributes and labour market dynamics.

From analytical models (see, McFadden, 1973), we know that the multiple-choice nature of this classification calls for the use of a multinomial Logit analysis. This model, which is an extension of the binary Logit model, is appropriate because it allows having more than two values for labour market behaviour and the exogenous variables to depend on the alternatives.[21] Using this technique, we can estimate the effect of a given location of study on the likelihood that a randomly-chosen immigrant (average immigrant) will select any given labour force status compared to his/her randomly chosen Canadian-born (average Canadian-born) counterpart, after having held other characteristics constant.

The net effect that each location of study has on the labour force status of immigrants relative to Canadian-born is estimated for each of very-recent, recent and established immigrants. In doing so, we are able to quantify the change in the average likelihood that a very-recent, recent or established immigrant who graduated in a given country will be self-employed, for example, compared to their Canadian-born counterparts. A detailed description of the statistical methodology is available upon request to the author.

6.2 Employment earnings

The analysis of earnings differences by location of study is limited to paid employees. The self-employed are excluded from this analysis due to issues associated with the accuracy of self-reported labour income.[22] We perform two alternative empirical strategies for the earnings function. First, we use ordinary least-squares (OLS) to estimate the relationship between the natural logarithm of annual employment earnings of immigrants (as compared to the Canadian-born) and location of postsecondary study, taking into account the fact that employment earnings are also determined by several other measured attributes.

However, given that labour earnings are observed only for individuals who are employed in the wage sector, OLS estimates of the earnings equation may be biased because the unemployed and people out of the labour force are not collectively similar to individuals having a paid job.[23] Given that labour market behaviour might not be a random process (as pointed out in chapter 3), the effect of location of study on earnings may be underestimated as quantified using a standard OLS coefficient (Heckman, 1979). This in turn may compromise the validity of our key analytical conclusions. Our second empirical strategy consists of relying on a two-stage method proposed by Trost and Lee (1984) to correct for potential sample selection when estimating the wage earnings equation. This regression technique is described in an Appendix available upon request to the author.

Background explanatory variables

In order to estimate the sensitivity of labour market success of immigrants to their location of highest postsecondary certificate, degree or diploma completion, we specify that the dependent variables i.e., labour force status and annual employment earnings, are functions of a set of pertinent variables drawn from prior research.

Human capital: Labour market experience, health status and field of study all have been identified as major determinants of labour market success in a typical market economy (for international literature review, see Psacharopoulos and Patrinos 2002; for recent Canadian evidence, see for example, Boudarbat and Chernoff, 2009; Hansen 2006; Ferrer, Green and Riddell 2006; Sweetman and McBride, 2004). We account for health status via a dichotomous variable that takes the value 1 if activities of daily living are limited by physical problems and 0 if not. In line with previous research,[24] age and age squared are used to measure potential labour market experience. Field of study is taken into account with mutually exclusive dichotomous variables. Despite its relevancy for our analysis, education has been omitted from our regression models because it serves to build employment statuses such as undereducated, correctly-matched and overeducated (see Chapter 3). In doing so, we avoid producing spurious correlations between some labour market alternatives and levels of education.

Language skills: A critical number of empirical studies suggests that in most countries favoured by long-term international migrants, i.e., the United States, Australia and Canada,[25] labour market success is a function of proficiency in a country's official language(s) (see, for example, Chiswick and Miller (2002) for the United States; Pendakur and Pendakur (2002a) and Thomas (2009) for Canada; Liebig (2007) for Australia). Mutually-exclusive dichotomous variables are used to account for the knowledge of Canada's official languages, namely: English (reference category), French, English and French, neither English nor French.

Family circumstances: Our analysis includes a series of dummy variables that contain information on marital status, position in the economic family (i.e., whether an individual is the primary household maintainer or not) and household demographic structure (i.e., the family generation to which each individual of interest belongs and whether this person lives with dependent children or not). These variables have been shown to be associated with the decision to work, labour supply intensity (see for instance, Gunderson, 1998) and may measure the need for job security.

Employment conditions: There are some indications that individual earnings vary across professional occupations in Canada (see, for instance, Boudarbat and Chernoff, 2009; Hansen, 2006). Variations in employment earnings could be due to differences in work schedule or occupation: some workers may be observed with higher earnings because they hold two or more jobs, work longer hours or have secured employment in well-paying occupations. To take into account the effect of hours worked for pay, dummy variables are used to distinguish between mainly part-time (reference category) and mainly full-time work. Finally, the analysis controls for occupation via mutually-exclusive dichotomous variables.

Market forces: Business cycles, and institutional and environmental factors contribute to the variability of labour market conditions. For instance, a structural shift towards more skill-intensive employment opportunities in a given industry or sector will likely reduce the demand for less-skilled, less-educated, low-paid workers while increasing that for highly-educated, highly-skilled, well-paid workers. Similarly, the hiring of new employees is less likely to be a common practice in industries experiencing economic contraction as opposed to those experiencing economic growth. Further, there could be geographical variation in the type of labour supply, industrial composition or production technologies. To control for economic and institutional forces, we follow prior research (Boudarbat and Chernoff, 2009; Hansen, 2006; to name few) in using province or territory of residence and area of residence as explanatory variables. These variables also allow us to take into account other omitted variables that predict employment and earnings in a highly competitive economy such as the Canadian economy.[26]

Nonmarket forces: Previous studies indicate that regardless of gender, visible-minority immigrants, especially those of black descent, tend to earn significantly less than immigrant whites in Canada's labour markets, even after controlling for measured productive attributes (for example, see Baker and Benjamin, 1994; Pendakur and Pendakur, 1998; 2002b). It has been suggested that the significant earnings disadvantage comparatively experienced by immigrant members of visible minority groups is associated at least in part with economic discrimination in the marketplace, i.e., with the fact that visible minorities are treated differently (less favourably) than members of the majority racial group with identical measured productive attributes.[27] Also, it has been claimed that in a typical host economy with multiple source countries, limited information about the productive attributes of many prospective labour market participants may give many prospective employers an incentive to rely on observable characteristics such as race to proxy their productivity and reward them accordingly (see, for instance, Arai and Vilhelmsson, 2001, Junankar, Paul and Yasmeen, 2004). According to Frenette and Morissette (2003) and Aydemir and Skuterud (2004), observed economic underutilization of immigrants' professional skills could result from an amalgam of factors including visible-minority status. Our analysis therefore includes a dummy variable which takes the value 1 for visible minorities and 0 otherwise.[28]

Gender: There is some indication of differences in females' and males' occupational distributions in Canada. For instance, the *2006 Employment Equity Data Report* reveals that women disproportionately worked in white-collar, clerical, sales and services occupations, whereas men were disproportionately employed in senior, middle and other management, and in occupations unique to manufacturing, transportation or primary sector (Human Resources and Skills Development Canada, 2009). There is also theoretical support for gender differences in labour market participation in prior research. As an example, Nekby (2002) claims that labour market participation may be sensitive to gender because women have childbirth considerations and are more likely than men to allocate a greater share of their disposable time in the production of home-made public goods. To account for gender differences in labour force participation patterns, each of our regression models contains a dichotomous variable equal to 1 for males and 0 for females.

Chapter 7

Multivariate analysis

To start, it is important to note that this chapter focuses on the effect of location of postsecondary education completion on immigrants' employment status and earnings, compared to the Canadian-born, after controlling for the effects of each of the independent variables. In doing so, we do not imply that the effects of background variables on labour market outcomes of internationally-educated immigrants compared to the Canadian-born is not policy relevant or intriguing for research. Much of our motivation for this analytical strategy comes from two factors. First, the payoff to other personal and non-personal characteristics is not central to our report. Second, it has been extensively covered in prior Canadian empirical research (see for instance, Ferrer and Riddell, 2006; Hansen, 2006; Alboim, Finnie and Meng, 2005; Sweetman and McBride, 2004). Therefore, unless otherwise stated, the discussion of the analytical results in this chapter is purposively limited to the outcomes related to location of postsecondary study. That being said, Appendices 11.1 and 11.3 present an analysis of the determinants of labour market behaviour and earnings in Canada, other than location of postsecondary study and immigration status, whereas Appendix 11.4 analyzes selected multivariate results by individual location of highest postsecondary study.

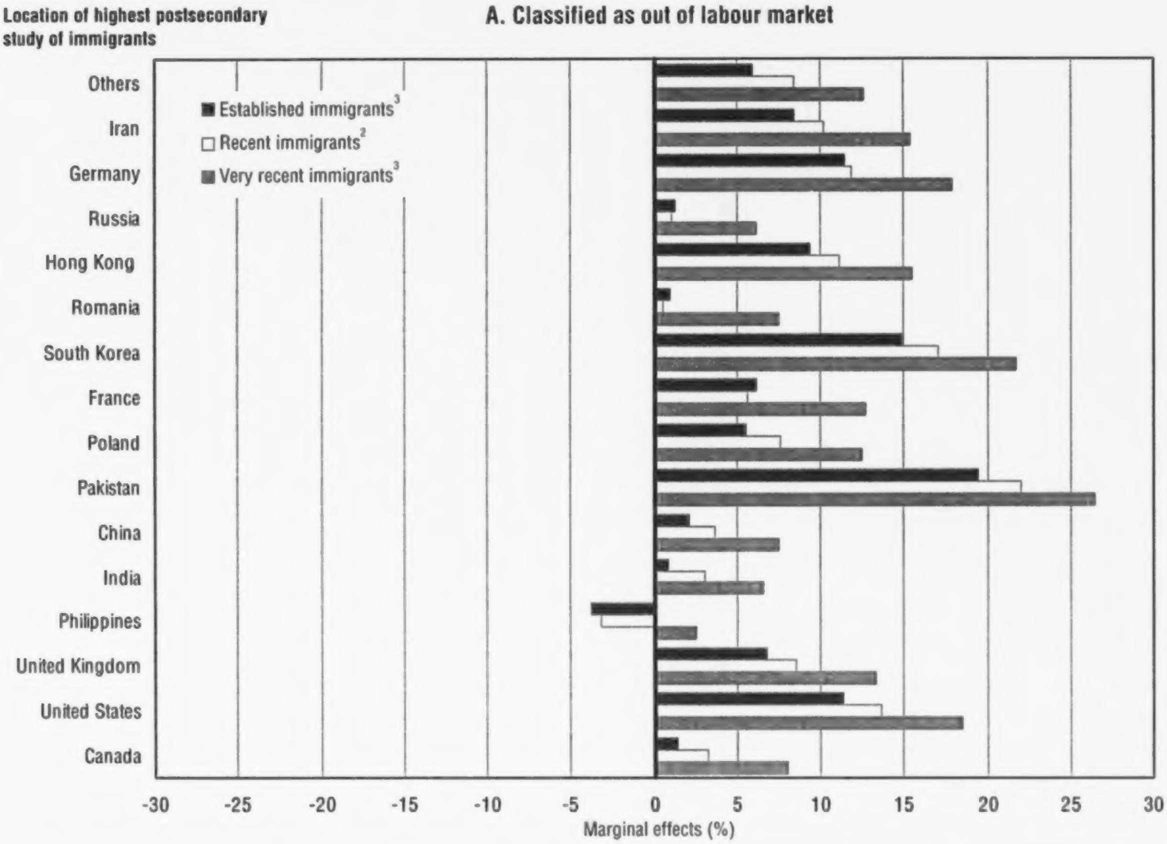
Prior research suggests that immigrants' labour market outcomes improve with duration of residence as they become increasingly familiar with Canadian employment opportunities and accumulate other characteristics relevant to Canadian jobs (see for instance, Ferrer and Riddell, 2006; Picot, 2008). So as to provide a comparative analysis, the findings are thus broken down by immigration cohort, distinguishing between very-recent, recent and established immigrants. Finally, as reported in Appendix Tables A.4 and A.6, we see that the size of the coefficients of location of study fall significantly when we take into account other observables such as gender, family structure, field of study, language spoken, etc. This reinforces the notion that by ignoring differences in personal and non-personal factors, descriptive analysis alone produces overestimated effects of postsecondary location of study on relative labour market outcomes of landed immigrants.

7.1 Results: Labour force status

Chart 1 shows the marginal effects of immigrants' location of postsecondary study on their relative labour force status, in comparison with the Canadian-born. We choose to analyse marginal effects instead of the coefficients because they are much easier to interpret: they reflect the magnitude of the effect a given location of postsecondary study has on an immigrant' labour force status as compared to the Canadian-born.[29] Charts 1.A to 1.F present an overview of, in sequence, persons not in the labour force (Chart 1.A), self-employed workers (Chart 1.B), undereducated employees (Chart 1.C), correctly-matched employees (Chart 1.D), overeducated employees (Chart 1.E) and persons attending school full-time or part-time (Chart 1.F). In each graph, the 0 value on the X-axis represents our reference demographic group, i.e., the Canadian-born. A positive (negative) marginal effect of a given location of postsecondary study indicates an increasing (decreasing) effect of that location of study on the likelihood that an average immigrant from a given cohort will have a specific labour force status relative to the average Canadian-born, after controlling for other factors that influence employment status.

Chart 1.A

Predicted relative impact of location of highest postsecondary study on relative labour force status of immigrants — Marginal effects



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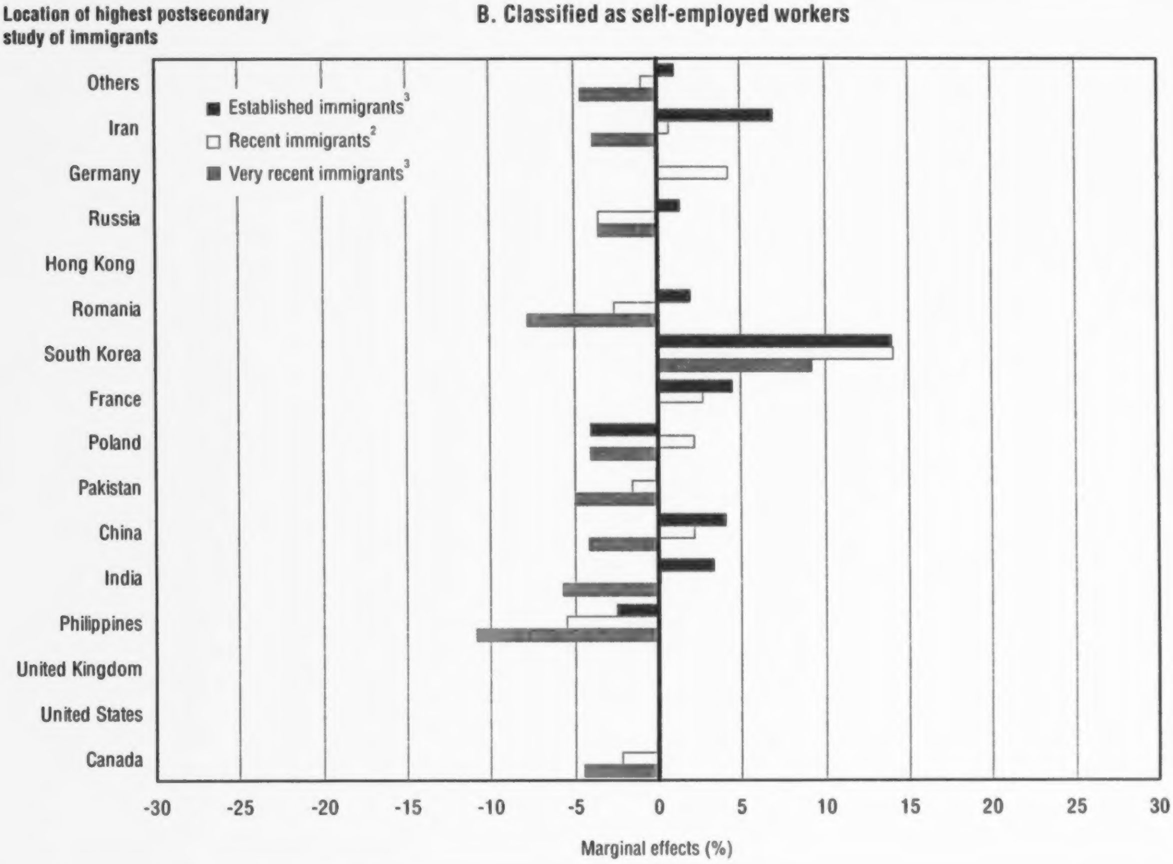
1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

Note: Data points are marginal effects derived from Appendix Table A.4. The typical partial effect is based on the means of the independent variables. It reflects the increase or decrease in the mean predicted probability that a prime-age (25-64) immigrant with a postsecondary education who completed his/her highest degree in a particular country will be out of labour market compared with a native-born Canadian of comparable observables when all other factors remain constant.

Source: Author's calculations based on data from the 2006 Census of Population.

Chart 1.B

Predicted relative impact of location of highest postsecondary study on relative labour force status of immigrants — Marginal effects



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1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

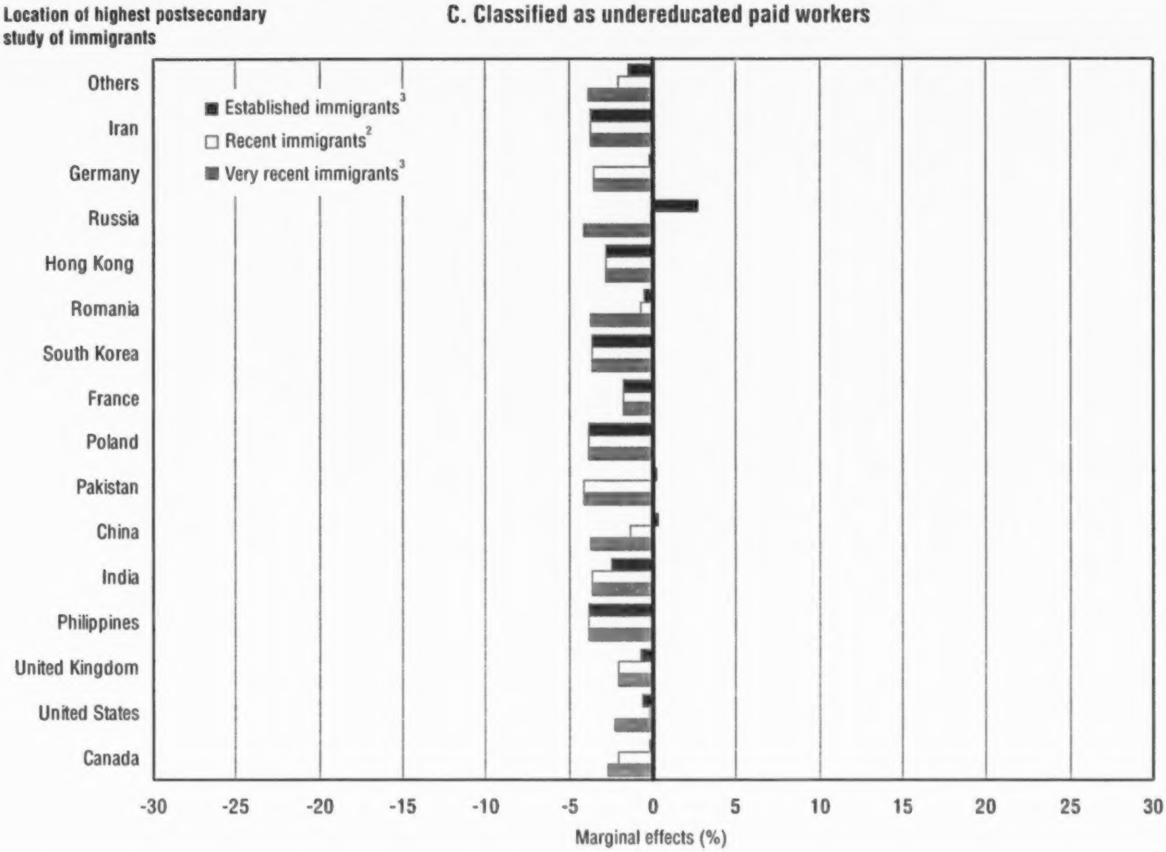
Notes: Data points are marginal effects derived from Appendix Table A.4. The typical partial effect is based on the means of the independent variables. It reflects the increase or decrease in the mean predicted probability that a prime-age (25-64) immigrant with a postsecondary education who completed his/her highest degree in a particular country will be self-employed compared with a native-born Canadian of comparable observables when all other factors remain constant.

No bar indicates that the marginal effects are zero.

Source: Author's calculations based on data from the 2006 Census of Population.

Chart 1.C

Predicted relative impact of location of highest postsecondary study on relative labour force status of immigrants — Marginal effects



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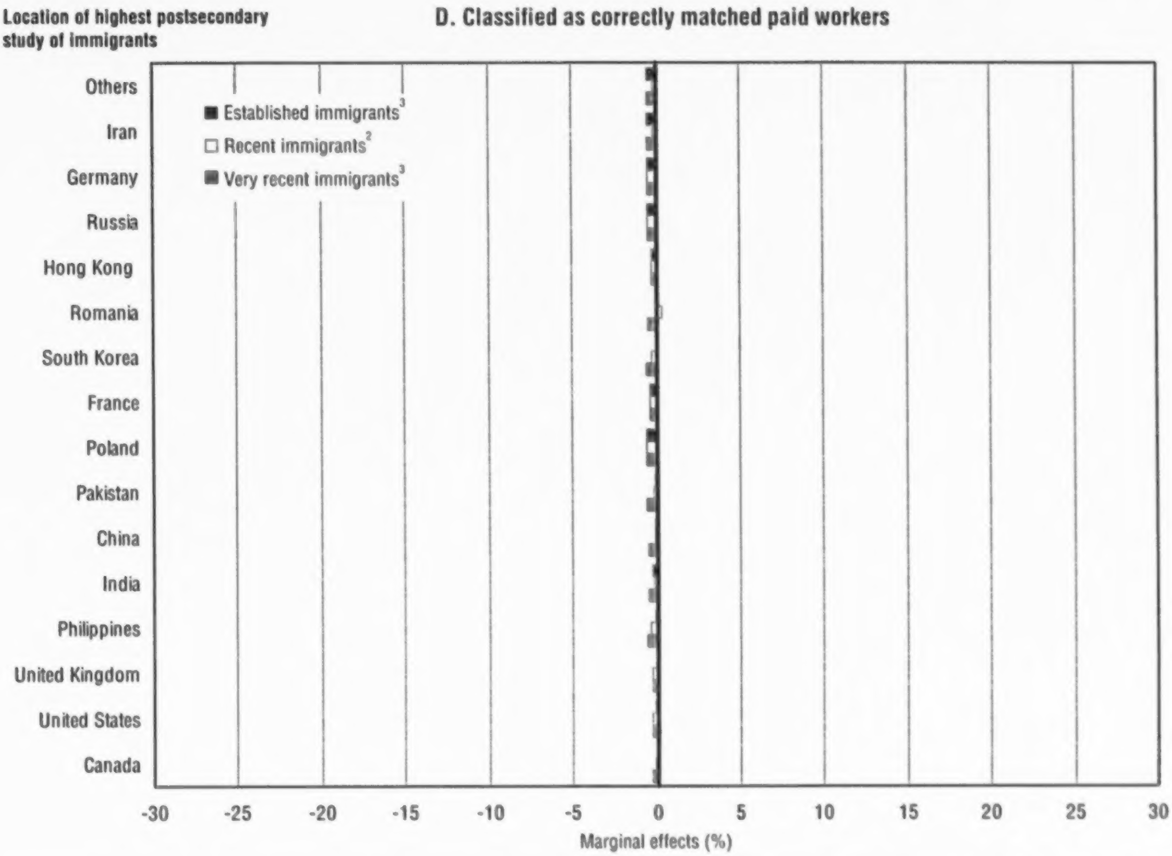
1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

Note: Data points are marginal effects derived from Appendix Table A.4. The typical partial effect is based on the means of the independent variables. It reflects the increase or decrease in the mean predicted probability that a prime-age (25-64) immigrant with a postsecondary education who completed his/her highest degree in a particular country will be an undereducated paid worker compared with a native-born Canadian of comparable observables when all other factors remain constant.

Source: Author's calculations based on data from the 2006 Census of Population.

Chart 1.D

Predicted relative impact of location of highest postsecondary study on relative labour force status of immigrants — Marginal effects



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1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

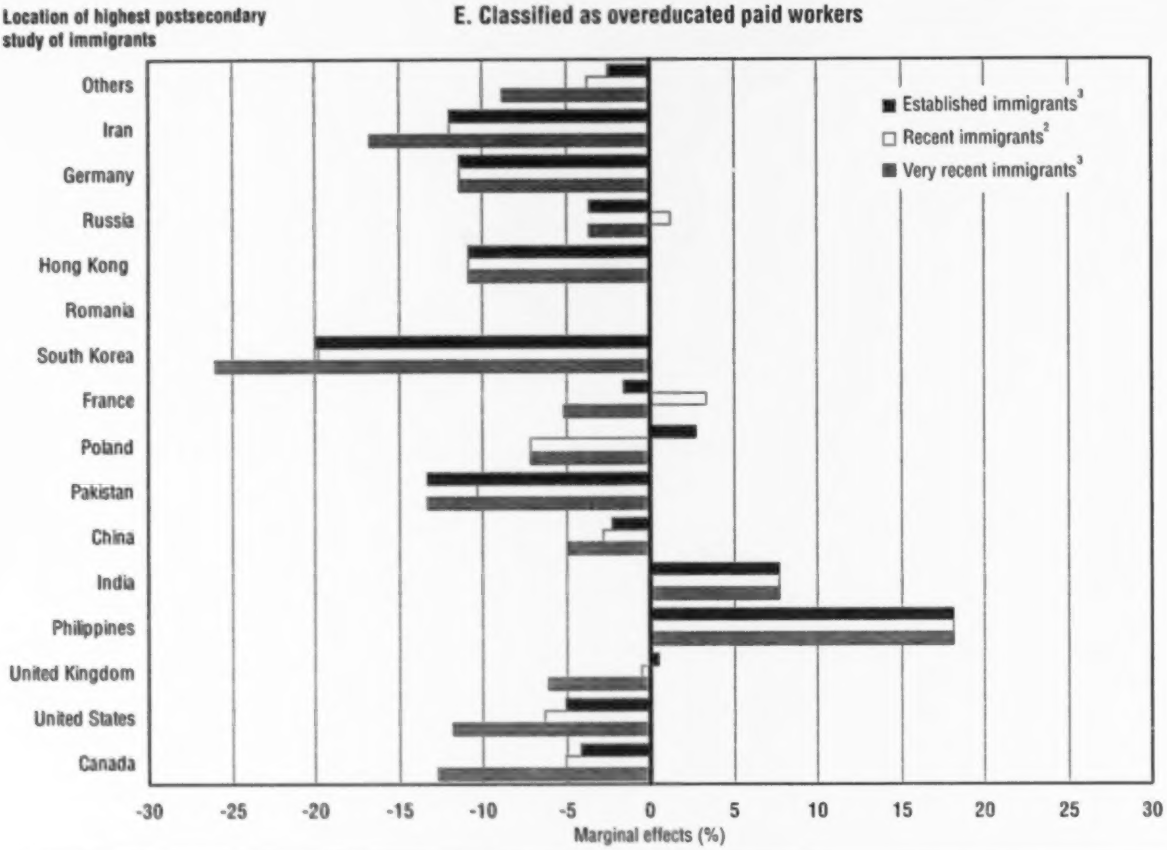
Notes: Data points are marginal effects derived from Appendix Table A.4. The typical partial effect is based on the means of the independent variables. It reflects the increase or decrease in the mean predicted probability that a prime-age (25-64) immigrant with a postsecondary education who completed his/her highest degree in a particular country will be a correctly matched paid worker compared with a native-born Canadian of comparable observables when all other factors remain constant.

No bar indicates that the marginal effects are zero.

Source: Author's calculations based on data from the 2006 Census of Population.

Chart 1.E

Predicted relative impact of location of highest postsecondary study on relative labour force status of immigrants — Marginal effects



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1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

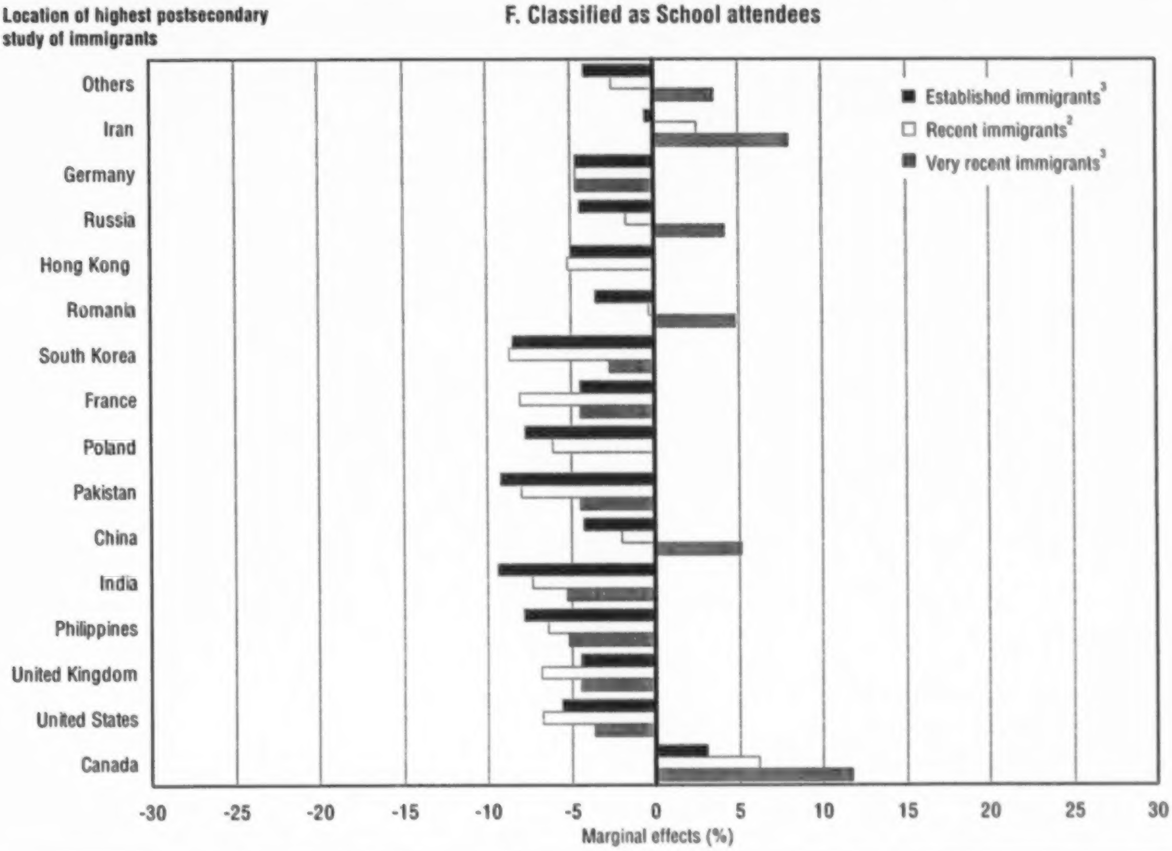
Notes: Data points are marginal effects derived from Appendix Table A.4. The typical partial effect is based on the means of the independent variables. It reflects the increase or decrease in the mean predicted probability that a prime-age (25-64) immigrant with a postsecondary education who completed his/her highest degree in a particular country will be an overeducated paid worker compared with a native-born Canadian of comparable observables when all other factors remain constant.

No bar indicates that the marginal effects are zero.

Source: Author's calculations based on data from the 2006 Census of Population.

Chart 1.F

Predicted relative impact of location of highest postsecondary study on relative labour force status of immigrants — Marginal effects



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1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

Notes: Data points are marginal effects derived from Appendix Table A.4. The typical partial effect is based on the means of the independent variables. It reflects the increase or decrease in the mean predicted probability that a prime-age (25-64) immigrant with a postsecondary education who completed his/her highest degree in a particular country will be a school attendee compared with a native-born Canadian of comparable observables when all other factors remain constant.

No bar indicates that the marginal effects are zero.

Source: Author's calculations based on data from the 2006 Census of Population.

A. Very-recent immigrants

Compared with being unemployed, almost all very-recent immigrants were less likely to find paid employment and more likely to be out of the labour force than the Canadian-born. Particularly, very-recent immigrants were less likely than the Canadian-born to be undereducated or correctly-matched employees, everything else held equal. These results reinforce previous findings by Aydemir and Skuterud (2004) and Frenette and Morissette (2003) that Canadian newcomers may face a comparative disadvantage in the allocation process of paid jobs, suggesting that pre-migration skills are heavily discounted in Canada's labour markets. Only very-recent immigrants who completed their postsecondary education in India (+8%) or the Philippines (+18%) were more likely than the Canadian-born to be classified as overeducated employees. Likewise, self-employment was more likely to be important among very-recent immigrants who completed their postsecondary studies in South Korea, with a predicted average probability that was 9% higher than that of the Canadian-born.

The current acceleration of technological changes in most advanced economies of the world may lead most Canadian firms to constantly modify conditions under which they utilize capital and labour in the production process of commodities so as to remain competitive on national and international markets. Hence, prime age (25 to 64) individuals with a postsecondary education who have no attachment to the labour market might face a higher risk of downgrading their human capital. This in turn could result in a permanent confinement at the bottom of the earnings distribution and economic vulnerability in the long run. Chart 1.A shows that, although very-recent immigrants were more likely than the Canadian-born to be out of the labour force, those who completed their postsecondary education in Pakistan had the highest predicted likelihood of being out of the labour force (+27%), closely followed by those who graduated in South Korea (+22%).

Chiswick (1978) suggests that newly-arrived immigrants may be expected to have a weaker attachment to the host country's labour markets because the initial years of settlement in a new country are often marked by greater investment in skills relevant to local jobs. If differences in the predicted likelihood of being out of the labour force between very-recent immigrants and the Canadian-born are due to differences in initial investment in Canada-specific skills, then in accordance with this hypothesis, we would expect no huge gap within the same immigration cohort. Interestingly, we note that very-recent immigrants who obtained their highest postsecondary degree in Pakistan are: over ten times more likely to be out of the labour force than those who completed their postsecondary education in the Philippines; over four times more likely than those who graduated in India, Romania or Russia; and over twice as likely as those who finished their postsecondary studies in France or Poland.

It seems reasonable, therefore, to consider the following explanation proposed by Baker and Benjamin (1997): compared with the average Canadian-born, the typical newcomer has to simultaneously acquire skills specific to the host country and begin earning a living. To accomplish that, immigrant couples may adopt a strategy of labour specialization. One spouse, generally the wife, will work full-time to support the household or will produce home-made commodities. Meanwhile, the other spouse, generally the husband, will focus mainly on acquiring qualifications specific to the host country through education, apprenticeship or on-the-job training. Indeed, data not reported here show that as of 2006, more than half (52%) of the highly-educated population between 25 and 64 who were not in the labour force were women. This proportion is slightly higher for immigrants (56%) than for the Canadian-born (50%). Moreover, 30% of the Canadian-born who are not in the labour force are married women, compared to 40% of immigrants not in the labour force.

Compared to the unemployed, very-recent immigrants who completed their postsecondary education in Canada were, on average, 13% less likely to be overeducated and 8% more likely to be out of the labour market relative to the Canadian-born. This result is worth discussing because descriptive statistics not reported here indicate that over half (58%) of very-recent immigrants with a Canadian postsecondary degree aged 25 to 64 who were not school attendees in 2006 had graduated in fields of study identified by authors such as Sweetman and McBride (2004) as high-paying fields of study in the Canadian economy, namely: business / administration (26%); engineering (19%); and health / welfare (13%). Further, Chiswick (1978) argues that it is highly beneficial for almost all internationally-educated immigrants to invest in host-country educational capital because they will always face a comparative disadvantage in the allocation process of well-paying jobs as a result of "country-specific aspects of the knowledge acquired in school, lower quality of foreign credentials, or the poorer information they provide employers who use schooling as a screen." One implication of our findings therefore is that acquiring a postsecondary credential in Canada may assist very-recent immigrants in achieving positive labour market outcomes, but it does not necessarily guarantee positive outcomes for all who do so.

Our estimates indicate that very-recent immigrants who completed their highest postsecondary education in Canada, China, Romania, the Russian Federation or Iran were more likely than the Canadian-born to be attending school, either full-time or part-time, supporting the skills-investment hypothesis. However, very-recent immigrants who finished their postsecondary education in Pakistan and South Korea were, respectively, 4% and 3% less likely to be attending school than their Canadian-born counterparts. This last finding is especially surprising since immigrant members of those two groups were also more likely to be out of the labour force and had on average, the smallest chances of securing paid employment quickly. This result could be at least in part explained by differences in opportunity costs of noneconomic activities: the cost of spending disposable time in nonmarket activities including the accumulation of Canada-specific skills may be so high for some very-recent immigrants with a postsecondary education who completed their highest level of postsecondary education in South Korea or Pakistan that they chose to work for pay with foreign credentials despite having lower initial employment perspectives.

B. Recent immigrants

The effect of location of study is similar for very-recent and recent immigrant groups, though different in magnitude (see Charts 1.A to 1.F). Among recent immigrants with a postsecondary education, those who completed their education in South Korea were more likely to be self-employed (+14%) and to be out of the labour market (+17%) and less likely to be overeducated paid employees (-20%)

compared to the Canadian-born. Likewise, among recent immigrants, immigrants from the Philippines and India tended to be overeducated on Canada's labour markets: relative to the Canadian-born, the incidence of over-education was 18% higher for recent immigrants with a postsecondary education completed in the Philippines and 8% higher for those who completed their studies in India. However, recent immigrants who completed their highest level of postsecondary education outside Canada were less likely than the Canadian-born to be attending school, everything else held equal.

Some interesting patterns emerge when we compare estimates for prime-aged very-recent and recent immigrants with a postsecondary education. For example, compared to the Canadian-born with comparable ages and education levels, very-recent immigrants who completed their postsecondary studies in France were 5% less likely to be overeducated, whereas their recent-immigrants counterparts were 3% more likely to be overeducated, everything else held constant. For immigrants who completed their postsecondary education in China, duration of residence made a slight difference in the likelihood of being self-employed: relative to the Canadian-born, very-recent and recent immigrants were 4% less likely and 2% more likely, respectively, to be self-employed. Assuming homogeneous human capital and time effects, the implication of these results is that after 5 to 10 years of permanent residence, the postsecondary education of many immigrants may still be less applicable to the Canadian economy.

Borjas (1985) argues for the U.S. that significant changes in national origin of the immigrant flow in the last decades have created cohort-based differences in the structure and the quality of American immigration over time. This in turn has produced intra-group variations in economic success of foreign-born individuals in the U.S, regardless of origin of individual human capital (i.e., education and/or experience). Interestingly, in Canada between 2001 and 2006, almost 60% percent of very-recent immigrants came from Asia and the Middle East, and the proportion of recent immigrants from the Caribbean, Central and South America and Africa increased over 10 percent (Corak, 2008). Following Borjas (1985), differences in employment patterns of very-recent and recent immigrants educated in the same country could be interpreted as reflecting cohort effects rather than immigrant adjustment effects. To cite Lalonde and Topel (1992), it may be that cohort-unobserved attributes (such as talent or immigrant quality) that "affect productivity are fixed within an arrival cohort."

C. Established immigrants

Charts 1.A to 1.F also present the marginal effects of location of postsecondary study for those individuals who have been landed immigrants to Canada for more than a decade. It is commonly argued that a longer duration of residence will have a positive effect on the employment prospects of most newcomers as they acquire skills and accumulate social capital over time. However, despite a lengthy period of permanent residence, the general pattern of established immigrants' marginal effects of location of study on labour force status remains quite similar to the marginal effects for very-recent and recent immigrants, though somewhat less pronounced.

Compared to being unemployed, most established immigrants were less likely to have paid employment and were more likely to be out of the labour force than the Canadian-born, everything else held equal. Similarly, our estimates indicate that established immigrants who completed their postsecondary education in Pakistan or South Korea were the most likely to be out of the labour force and the least likely to be overeducated employees, compared to the Canadian-born. As for other immigration cohorts, we also note that established immigrants who completed their postsecondary studies in the Philippines or India were more likely than the Canadian-born to be overqualified. Similarly, Nekby (2002) finds that after 20 years of permanent residence in Sweden, immigrants still have employment ratios that are significantly lower than those for the Swedish-born. Likewise, Chiswick, Cohen and Zach (1997) show that after ten years of residence in the United States, employment perspectives of the American-born are better than those for many immigrants, and far better than those for Asian immigrants. These findings suggest that the comparative disadvantage faced by established immigrants in the allocation of paid jobs is not unique to the Canadian economy.

According to the literature (see for instance, Ferrer and Riddell, 2008; Picot, 2008; Frenette and Morissette, 2003), established immigrants are expected to have employment ratios closer to those for the Canadian-born and higher than those for very-recent and recent immigrants because the latter two groups are generally neither familiar with employment opportunities in Canada nor do they have sufficient Canadian work history. This hypothesis is known in the empirical immigration literature as the new-labour-market entry effect. As we noted here, however, there is a gap in terms of employment in the wage sector between the Canadian-born and many established immigrant groups. Arguably, therefore, our findings are not exclusively explained by the so-called new-labour market entry effect. It may also be that many Canadian employers and regulatory bodies using education as a screening device may be less familiar with the implications of a foreign education for a worker's productivity (Chiswick, 1978). There is also the possibility that regardless of duration of residence, some foreign-educated immigrants may face other difficulties in Canada's labour markets, including a lack of mobility or good labour market information, economic discrimination and barriers to many professional occupations, especially in the regulated occupations.

Summing up, this chapter corroborates the descriptive evidence by showing that the Canadian-born had better employment outcomes than almost all internationally-educated immigrants, and especially very-recent immigrants in 2006. But, immigrants' relative disadvantage in terms of paid employment was sensitive to location of study: immigrants who completed their postsecondary education in Western Europe (France, Germany and the United Kingdom) or in North America (Canada, the United States) were more likely than other internationally-educated immigrants, especially those who received their highest degree in Pakistan or South Korea, to secure paid employment in Canada.

7.2 Results: Employment earnings

Before turning to the discussion of the regression results, it is worth clarifying the latter. First, separate regressions are performed for each of: undereducated, correctly-matched and overeducated paid employees, as well as for all paid employees. Then, we tested the equality of the regression coefficients for the three categories of paid employment, i.e., undereducated, correctly-matched and overeducated. The results of the Chow test (not reported here) suggest that there are differences in the earnings formation process between the various categories of employees. Second, as shown in Tables A.5 and A.6 in the Appendix, selection terms are all statistically significant at the 1% level, suggesting that education-job mismatch was not a random process in the Canadian wage sector.

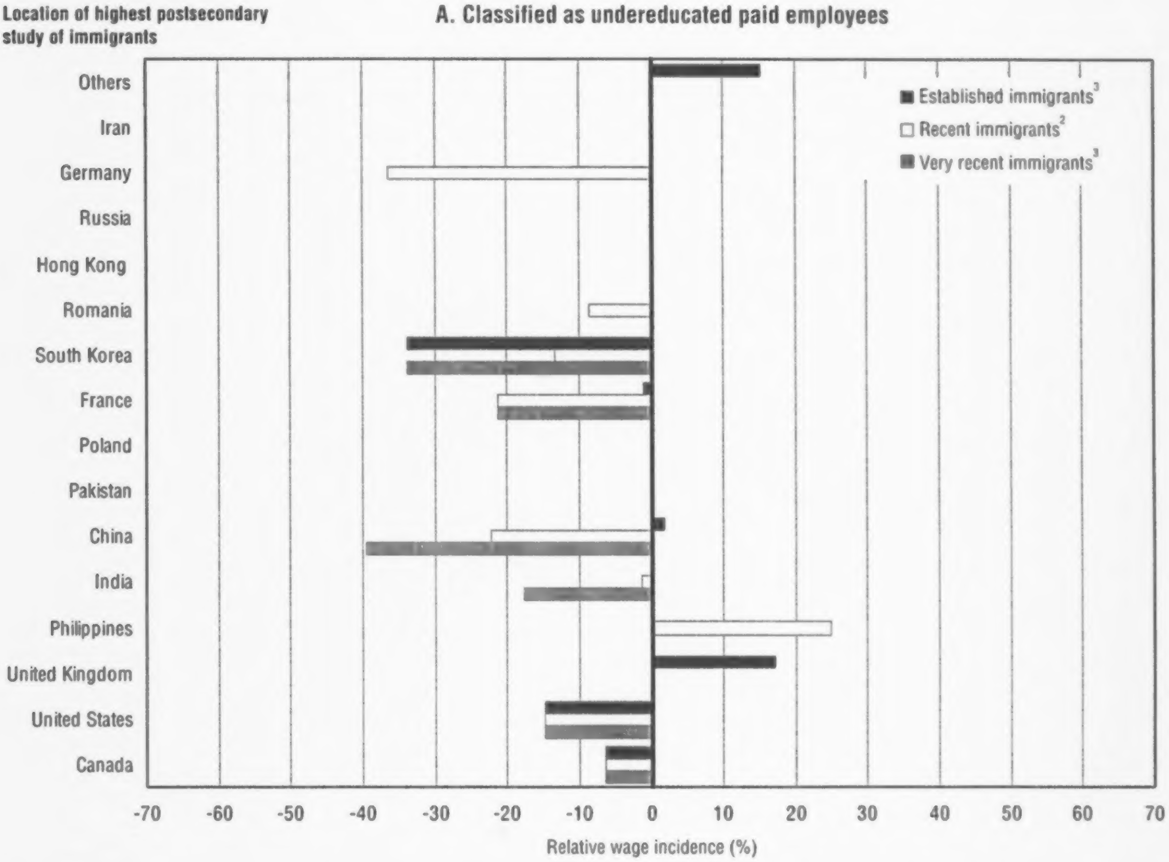
Second, the selection term is negative for undereducated and correctly-matched employees. The implication of this result is that a number of unobserved characteristics (such as lack of credential recognition, discriminatory hiring/firing practices, tougher labour regulation, etc.) in those categories were negatively associated with the characteristics that affected individual economic rent, i.e., the salary for which prospective labour market participants were prepared to work. Second, the selection term is positive for overeducated employees and for all paid employees combined. For these groups, that likely points to a positive correlation between factors omitted from the model and factors that influence employment earnings.

Third, the magnitude of the estimated coefficients varies significantly between the two types of earnings model, particularly for the undereducated and correctly-matched groups. Take undereducated paid employees for instance. Estimates unadjusted for potential selection bias indicate that very-recent immigrants with a postsecondary education aged 25 to 64 who completed their postsecondary education in Poland or Germany were the only ones whose average earnings were lower than those for their Canadian-born counterparts, which is not the case when adjusted estimates are considered. Differences are also observed in terms of the significance of some effects of the selected explanatory variables (see Table A.5 in the Appendix). Fourth, the results of an examination of background characteristics affecting employment earnings are shown in Appendix 11.3. Last but not least, a country-level analysis of the effect of the origin of highest postsecondary education on prime age (25 to 64) immigrants' employment earnings is provided in Appendix 11.4.

Having said all this, unless otherwise stated, we will concentrate our analysis on estimates obtained after accounting for selectivity. For this purpose, Charts 2.A to 2.D presents, in sequence, the estimated relationships between relative employment earnings and location of study of landed immigrants who were undereducated (Chart 2.A), correctly matched (Chart 2.B) and overeducated (Chart 2.C) in 2006, as derived from Table A.6 in the Appendix. Finally, the relative earnings associated with location of study for immigrants who worked in the wage sector is presented in Chart 2.D.

Chart 2.A

Predicted relative impact of location of highest postsecondary study on employment earnings of immigrants



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1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

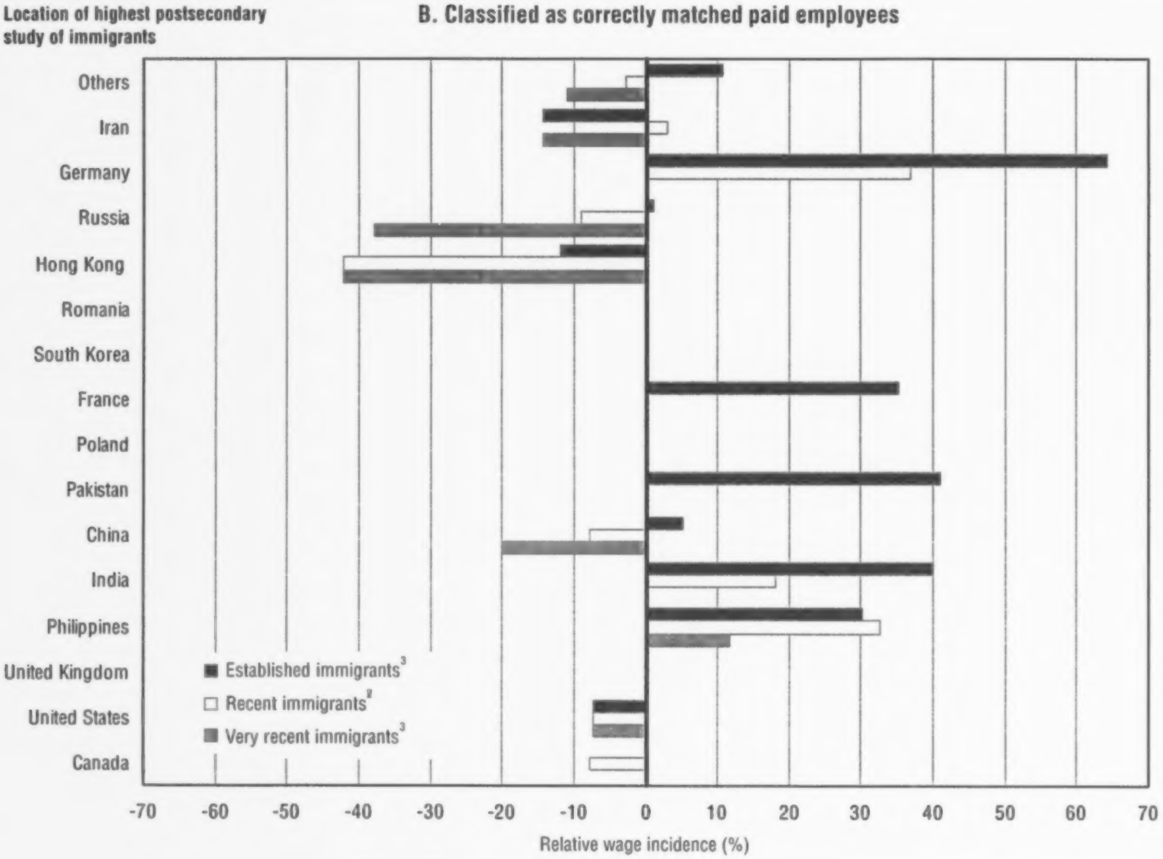
Notes: Data points are derived from Table A.6 in the Appendix. Our earnings equations have semi-logarithmic forms; that is, the dependent variable is expressed in logarithmic form while the exogenous variables are almost all dichotomous. This creates a situation that is conducive to undervaluation / overvaluation of the majority of the estimated coefficients (Kennedy, 1981; Halvorsen and Palmquist, 1980). To avoid that, we followed the example of Kennedy (1981) and adjusted regression coefficients of each of Chart 2.A to Chart 2.D.

No bar indicates that the marginal effects are zero.

Source: Author's calculations based on the 2006 Census of Population.

Chart 2.B

Predicted relative impact of location of highest postsecondary study on employment earnings of immigrants



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1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

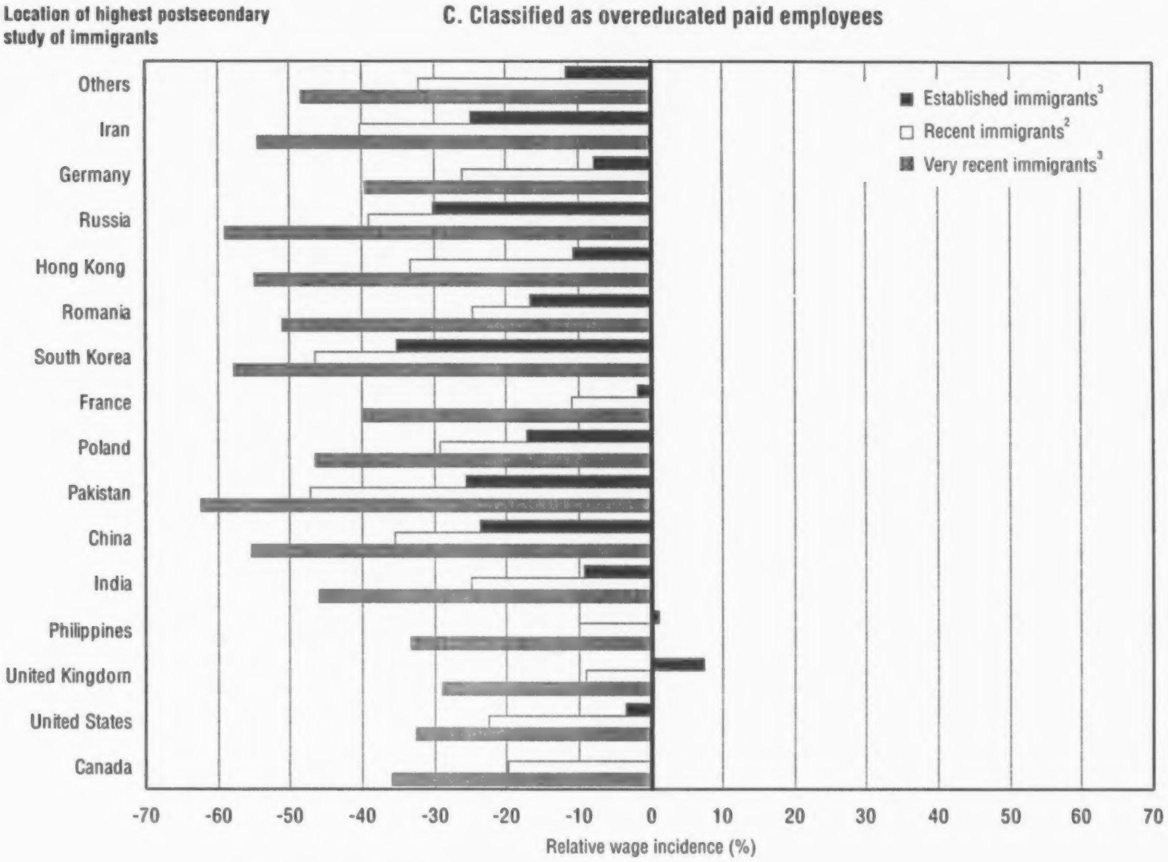
Notes: Data points are derived from Table A.6 in the Appendix. Our earnings equations have semi-logarithmic forms; that is, the dependent variable is expressed in logarithmic form while the exogenous variables are almost all dichotomous. This creates a situation that is conducive to undervaluation / overvaluation of the majority of the estimated coefficients (Kennedy, 1981; Halvorsen and Palmquist, 1980). To avoid that, we followed the example of Kennedy (1981) and adjusted regression coefficients of each of Chart 2.A to Chart 2.D.

No bar indicates that the marginal effects are zero.

Source: Author's calculations based on the 2006 Census of Population.

Chart 2.C

Predicted relative impact of location of highest postsecondary study on employment earnings of immigrants



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1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

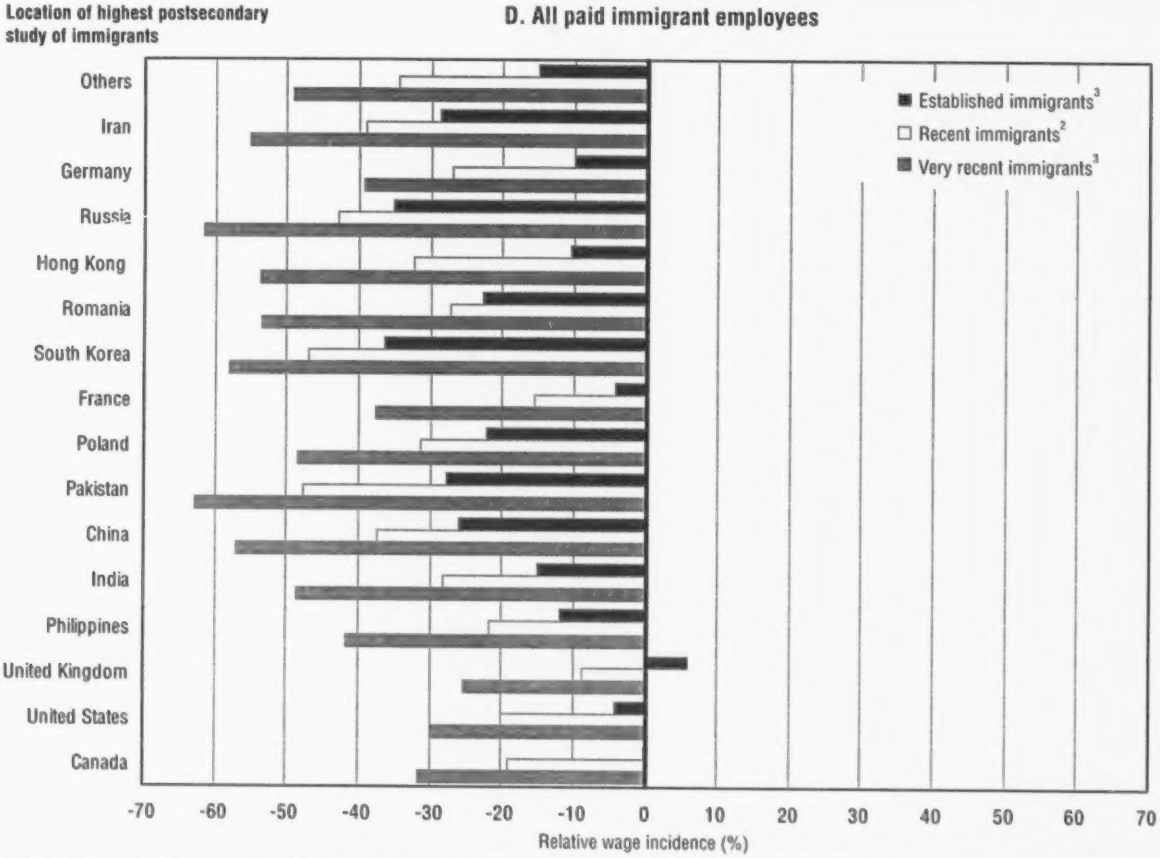
Notes: Data points are derived from Table A.6 in the Appendix. Our earnings equations have semi-logarithmic forms; that is, the dependent variable is expressed in logarithmic form while the exogenous variables are almost all dichotomous. This creates a situation that is conducive to undervaluation / overvaluation of the majority of the estimated coefficients (Kennedy, 1981; Halvorsen and Palmquist, 1980). To avoid that, we followed the example of Kennedy (1981) and adjusted regression coefficients of each of Chart 2.A to Chart 2.D.

No bar indicates that the marginal effects are zero.

Source: Author's calculations based on the 2006 Census of Population.

Chart 2.D

Predicted relative impact of location of highest postsecondary study on employment earnings of immigrants



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1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

Notes: Data points are derived from Table A.6 in the Appendix. Our earnings equations have semi-logarithmic forms; that is, the dependent variable is expressed in logarithmic form while the exogenous variables are almost all dichotomous. This creates a situation that is conducive to undervaluation / overvaluation of the majority of the estimated coefficients (Kennedy, 1981; Halvorsen and Palmquist, 1980). To avoid that, we followed the example of Kennedy (1981) and adjusted regression coefficients of each of Chart 2.A to Chart 2.D.

No bar indicates that the marginal effects are zero.

Source: Author's calculations based on the 2006 Census of Population.

A. Very-recent immigrants

Looking at the estimates for all wage-sector workers (Chart 2.D), we see that very-recent immigrants were likely to experience a significant earnings gap relative to the Canadian-born, ranging between -25% and -63%, even after taking into account several background factors. This result implies at least in part that newcomers' credentials (including education) may be valued differently than those for the Canadian-born.

Borjas (1992) argues that skills accumulated in economically developed countries have the highest transferability in most countries accepting international migrants for permanent residence because of similarities in industrial structures and personal characteristics used to sort prospective labour market participants by productivity level and to pay them accordingly. If variations in earnings gap between very-recent immigrants from different locations of postsecondary study and the Canadian-born are due to variations in international skills transferability, then, in accordance with the immigrant-skills less-than-perfect international transferability theory, we would expect the earnings gap to be higher for education completed in less-developed countries and smaller (or positive) for education completed in countries that are economically similar to Canada.

Chart 2.D indicates that this is the case: the relative earnings effect of location of study is not homogeneous across all very-recent immigrants. Very-recent immigrants with the largest earnings gap relative to the Canadian-born were those who completed their postsecondary studies in Pakistan, the Russian Federation, South Korea, China or Iran. In particular, those with a postsecondary credential obtained in Pakistan or the Russian Federation earned, on average, 62% less than the Canadian-born, holding everything else constant. Conversely, very-recent immigrants who graduated in the United Kingdom, the United States, France, Germany or Canada had the smallest wage gap compared to the Canadian-born. It is interesting to note that the smallest earnings gap was found for very-recent immigrants who finished their postsecondary education in the United Kingdom (-25%) or the United States (-30%).

Bratsberg and Terrell (2002) who show for the U.S. that the private rates of return to foreign education are significantly higher for immigrants from English-speaking countries than for immigrants from non-English-speaking countries conclude that advanced educational credentials from English-speaking countries are highly transferable in the U.S labour markets. We tend to follow Bratsberg and Terrell (2002) in arguing that everything else held equal, postsecondary certificates, diplomas or degrees obtained in developed English-speaking economies such as the United Kingdom and the United States were the most easily adaptable to Canada's labour markets in 2006.

The analysis of variations in the earnings gaps between very-recent immigrants from different locations of study and the Canadian-born by education-job match level corroborates most findings documented for all paid employees. Concerning overeducated employees, Chart 2.C shows for instance that the earnings gap experienced by very-recent immigrants with a postsecondary education who completed their highest postsecondary studies in Pakistan, South Korea or Russia was twice as high as for those who completed their highest postsecondary education in the United Kingdom, the United States or in the Philippines, compared to Canadian-born.

The case of very-recent immigrants with a postsecondary education completed in the Philippines is worth noting because differences in international skills transferability are commonly associated with socio-cultural and economic differences between source and host countries (see, for instance, Bratsberg and Terrell, 2002; Nekby, 2002; Borjas, 1992 ; Chiswick; 1978). As shown in Chart 2.C, very-recent immigrants with postsecondary credentials completed in the Philippines earned, on average, 33% less than the Canadian-born, whereas those who completed their postsecondary education in France or Germany earned, on average, 40% less, and those who completed their postsecondary studies in Canada earned 36% less, on average.

Further, correctly-matched very-recent immigrants who completed their highest postsecondary studies in the Philippines earned 12% more on average than their Canadian-born counterparts, everything else held equal (Chart B). This suggests two intuitive interpretations. First, there might be no earnings advantage for an average very-recent immigrant with a postsecondary education who completed his / her highest postsecondary education in the Philippines to acquire additional postsecondary education in Canada. Second, it might possible for prime-aged immigrants with a postsecondary education completed in the Philippines to improve their post-migration earnings simply through accumulation of Canadian skills other than education (such as Canada-specific experience / credentials, business / work culture, on-the-job training, etc.), or better selection of paid jobs.

Finally, Chart 2.A shows that there was no earnings gap compared to the Canadian-born for very-recent immigrants classified as being undereducated employees who were postsecondary graduates from Romania, the special administrative region of Hong Kong, the Russian Federation, Germany, Iran, the United Kingdom, Poland, Pakistan and the Philippines. The same is also true for very-recent immigrants educated in the United Kingdom, India, Pakistan, France, South Korea, Canada or Germany who worked in the Canadian wage sector as a correctly-matched employed.

As shown in Table 5, compared to the Canadian-born at 21%, relatively high proportions of very-recent immigrants who completed their postsecondary education in Romania, (42%), Russia (37%), Germany (31%), or Iran (34%) had graduated in engineering fields of study. Similarly, compared to the Canadian-born at 22%, relatively high proportions of very-recent immigrants who completed their postsecondary studies in the special administrative region of Hong Kong (43%), Poland (25%), Canada (27%) or France (26%) were graduates from business or administration fields of study. According to Sweetman and McBride (2004) engineering and business / administration fields of study belong to the subset of high-paying fields of study.

Everything else held equal, then, it may be that for many prime-aged very-recent immigrants with a postsecondary education completed in the Russian Federation, Germany, Iran, the United Kingdom, Poland, Pakistan or the Philippines and who worked as undereducated employees in Canada, the greater earnings derived from their professional occupation fully compensated for the wage loss associated with the lack of Canada-specific skills (such as Canadian education and labour market experience). The same explanation may also hold for very-recent immigrants with postsecondary credentials from India, France and the United Kingdom who worked as undereducated employees since they outnumbered the Canadian-born in the subgroup of graduates from business/ administration fields of study (Table 5).

B. Recent immigrants

The impact of location of study on employment earnings in the wage sector taken as a whole is similar between very-recent and recent immigrants, though smaller in magnitude for the latter. As noted above, for instance, the predicted wage gap for recent immigrants (compared to the Canadian-born) is the largest among those who completed their postsecondary studies in Pakistan, South Korea or the Russian Federation. The smallest earnings gap compared to the Canadian-born was found for those who completed their postsecondary education in the United Kingdom or France. The findings are similar for employees classified as being overeducated (Chart 2.C). Everything else held equal, these results suggest that regardless of the duration of residence, the average prospective employer may not understand very well, and so may not be in a position to evaluate, the properties of postsecondary credentials obtained in Pakistan, the Russian Federation or South Korea for the productivity of prospective labour market participants.

Concerning correctly-matched employees (Chart 2.B), recent immigrants with postsecondary credentials earned in the Philippines, India, Germany or Iran enjoyed a significant earnings premium relative to the Canadian-born with similar observed characteristics. Data not reported here indicate that among people classified as correctly-matched employees, the proportion of recent immigrants with a postsecondary education who had studied "hard sciences" in the Philippines (58%), India (62%), Germany (80%) or Iran (77%) was remarkably higher than that for the Canadian-born, at 46%. Also, prior studies (see, for instance Sweetman and McBride, 2004) have linked "hard sciences" to higher earnings on Canada's labour markets. One implication of this result could be that recent immigrants with a postsecondary education who completed their studies in the Philippines, India, Germany or Iran outnumbered their Canadian-born counterparts in the group of people who were correctly matched in highly-paid occupations.

The earnings premium related to recent immigrants with a postsecondary education completed in Germany, the Philippines, and India was 30%, 37% and 18%, respectively, among correctly-matched employees compared to their Canadian-born counterparts. Regarding employees classified as being undereducated, our results indicate that postsecondary education from the Philippines was associated with positive employment earnings: relative to their Canadian-born counterparts, recent immigrants educated in the Philippines enjoyed on average, a 25% wage advantage, after controlling for other variables.[30]

The finding of higher wage premiums for recent immigrants who completed their highest level of postsecondary education in the Philippines is striking, even surprising, given that the existence of a significant earnings gap between the Canadian-born and most immigrants coming from less-developed countries is well-documented in Canada (see, for instance, Frenette and Morissette, 2003; Picot, 2008). Further, previous research suggests that immigrants from the Philippines collectively have lower incomes than the national average and experience one of the highest levels of occupational and sectoral segmentation, primarily into low-paying and insecure jobs in healthcare, childcare, clerical, retail and manufacturing (for instance, Lindsay, 2001; England and Stiell, 1997).[31]

Assuming that many Canadian employers who use education as a screening device assess skills acquired abroad in a manner that does not significantly change over time, this evidence at the very least suggests the possibility of good employment opportunities for recent immigrants who completed their postsecondary studies in the Philippines, as compared to the Canadian-born and other immigrants with a postsecondary education. It might be that when given the opportunity to look for paid work that may be more suitable to their level of human capital, recent immigrants who completed their postsecondary education in the Philippines were more likely to secure employment in occupations generating high wage equilibriums in the Canadian economy (such as natural and applied sciences occupations), as compared to the Canadian-born and other internationally-educated immigrants. Descriptive statistics reported in Table 5 provide some support to this explanation: 74% of recent immigrants with a postsecondary education completed in the Philippines graduated in generally high-paying fields of study such as engineering (24%), business and management (29%) and health (20%), whereas this was the case for instance for 57% of the Canadian-born, 53% of recent immigrants with a postsecondary education from the U.S. and 61% of those who completed their studies in the United Kingdom.

C. Established immigrants

Similar to results reported earlier, there is an earnings gap between established immigrants with a postsecondary education and their Canadian-born counterparts (Charts 2.A to 2.D). In fact, only established immigrants who completed their postsecondary education in the United Kingdom enjoyed a 5% earnings premium relative to the Canadian-born. Other studies have found similar results (see, for instance, Frenette and Morissette, 2003; Baker and Benjamin, 1994). In particular, Frenette and Morissette (2003) report that 20 years after arriving in Canada, the employment earnings of male and female immigrants were 14% and 16% lower, respectively, than the employment earnings of Canadian-born men and women. This wage gap shows that there is still a possibility that immigrants face various barriers in Canadian labour markets, which do not disappear with duration of permanent residence in Canada. As Chiswick (1978) suggests, occupational segregation and wage discrimination may foster low earnings among highly-skilled and highly-educated immigrants in comparison with non-immigrants of comparable measured attributes.

There are striking differences across the three categories of education-job matches. Employees classified as being overeducated display an earnings portrait that mirrors that of very-recent and recent immigrants, that is, established immigrants with a postsecondary education completed in the United Kingdom earned on average, 7% more than their Canadian-born counterparts, whereas established immigrants from other countries showed a negative earnings gap, everything else held equal. Regarding correctly-matched workers, established immigrants with postsecondary credentials earned abroad had an earnings premium compared to the Canadian-born. But, established immigrants with a postsecondary education completed in Pakistan (+41%), India (+64%) and Germany (+40%) had higher earnings advantages relative to the their Canadian-born counterparts. Those with a Canadian postsecondary education who were correctly matched had employment earnings comparable to those of their Canadian-born counterparts, while those who completed their postsecondary education in the United States earned slightly less, on average.

Concerning employees classified as being undereducated, established immigrants with a postsecondary education completed in South Korea earned on average, about 34% less than their Canadian-born counterparts, whereas those who completed their studies in the United Kingdom earned on average, about 17% more than their Canadian-born counterparts. These differences are far from being trivial. On the one hand, they indicate that some highly-educated immigrants who completed their studies abroad may face a persistent comparative earnings disadvantage during their working lives. On the other hand, these results imply the existence of some convergence between the employment earnings of most landed immigrants and the Canadian-born over time.

Summing up, Chapter 7 evaluated from a multivariate perspective, the less-than-perfect international skills transferability hypothesis using direct information on location of study. Overall, we found evidence supporting this hypothesis; that is, most foreign credentials have on average, a depressing effect on earnings and employment prospects of immigrants, especially for very-recent cohorts. With these multivariate results in hands, we conclude that in Canada, many prospective employers and several other stakeholders (such as regulatory bodies, assessment agencies, etc.) may not value postsecondary educational qualifications from all source regions or countries on a unique standard. In other words, different economic values may be assigned to "outcomes" of different foreign postsecondary educational systems in Canada. Before concluding, however, the next chapter addresses two potential critiques of these findings.

Chapter 8

Sensitivity analysis

The empirical immigration-based research (see, for instance, Aydemir and Skuterud, 2005; Picot and Sweetman, 2005; Ferrer and Riddell, 2004; Pendakur and Pendakur, 1998) offers numerous explanations for observed earnings differentials between immigrants and the Canadian-born. These reasons include difficulties related to living in a foreign country, low mastery of host country official language(s), economic discrimination and lack of labour mobility, good social networks or foreign credential recognition, etc. In other words, the argument can be made that differences in labour market outcomes between internationally-educated immigrants and the Canadian-born might reflect factors other than the location of study, per se.[32] The goal of section 8.1 is to empirically address this potential critique.

It is a well-established fact in previous immigration-based research that in Canada, regardless of educational attainment, employment earnings of workers tend to grow significantly as they accumulate labour market experience (see, for instance, Ferrer and Riddell, 2006; Hansen, 2006; Alboim, Finnie and Meng, 2005; Sweetman and McBride, 2004). Thus, another argument can be made that instead of reflecting differences in the transferability of skills acquired through postsecondary education completed abroad per se, our results may essentially indicate differing amounts of labour market experience between immigrants with a postsecondary education aged 25 to 64, who were educated abroad or in Canada and the Canadian-born of comparable age and education. Section 8.2 seeks to empirically address this second potential critique.

8.1 Sensitivity analysis for immigration status bias

In order to perform this sensitivity analysis, we start by restricting the population of interest to prime-aged immigrants aged 25 to 64 with a postsecondary education. Next, we separately run our multivariate analyses for each of very-recent, recent and established immigrants using the methodology suggested by Trost and Lee (1984) for the correction of selection bias. Our rationale is as follows. Under the null assumption that the coefficient on location of study does not essentially capture the labour market premium/penalty associated with location of study, one should expect no significant variation in earnings, employment and education-job match rates between internationally-educated immigrants when the Canadian-born are excluded from the analysis.

Table 8 shows the estimated effects of location of study on the employment earnings of postsecondary-educated immigrants to Canada aged 25 to 64, by immigration cohort. For each immigration cohort, the omitted category consists of landed immigrants whose highest level of postsecondary education was completed in Canada. In addition, for the sake of simplicity, the results reported in Table 8 concern only earnings and location of study. We suppress results related to background variables and labour force status as they entirely mirror those obtained for all individuals aged 25 to 64 with a postsecondary education.

Table 8

Relative effect of location of postsecondary study on the employment earnings of internationally-educated immigrants aged 25 to 64, by immigration cohort, Canada, 2006

Location of postsecondary study	Immigration cohort							
	Very-recent immigrants[1]		Recent immigrants[2]		Established immigrants[3]		All immigrants	
	Coefficient	standard error	Coefficient	standard error	Coefficient	standard error	Coefficient	standard error
United States	0.150***	(0.026)	0.086***	(0.024)	-0.052***	(0.011)	-0.067***	(0.009)
United Kingdom	0.162***	(0.029)	0.189***	(0.025)	0.042***	(0.010)	-0.001	(0.008)
Philippines	-0.003	(0.025)	0.094***	(0.018)	-0.130***	(0.009)	-0.179***	(0.007)
India	-0.124***	(0.021)	-0.015	(0.018)	-0.167***	(0.013)	-0.292***	(0.009)
China	-0.295***	(0.022)	-0.142***	(0.018)	-0.303***	(0.022)	-0.494***	(0.010)
Pakistan	-0.427***	(0.031)	-0.293***	(0.028)	-0.321***	(0.032)	-0.583***	(0.017)
Poland	-0.242***	(0.074)	-0.103*	(0.057)	-0.238***	(0.012)	-0.225***	(0.012)
France	0.081**	(0.036)	0.137***	(0.033)	-0.008	(0.024)	-0.075***	(0.016)
South Korea	-0.339***	(0.048)	-0.266***	(0.045)	-0.453***	(0.045)	-0.574***	(0.027)
Romania	-0.211***	(0.032)	-0.045*	(0.027)	-0.236***	(0.023)	-0.344***	(0.015)
Hong Kong	-0.312***	(0.112)	-0.102***	(0.036)	-0.117***	(0.018)	-0.183***	(0.017)
Russia	-0.379***	(0.039)	-0.229***	(0.027)	-0.416***	(0.030)	-0.541***	(0.018)
Germany	-0.069	(0.053)	-0.071	(0.050)	-0.127***	(0.028)	-0.207***	(0.022)
Iran	-0.277***	(0.046)	-0.159***	(0.039)	-0.341***	(0.043)	-0.469***	(0.025)
Other countries[4]	-0.171***	(0.017)	-0.117***	(0.014)	-0.163***	(0.007)	-0.285***	(0.005)
Selection term	0.106***	(0.014)	0.078***	(0.013)	0.087***	(0.006)	0.092***	(0.005)
R^2	0.349		0.343		0.329		0.354	
Population	248,403		234,914		1,087,756		1,571,073	

* p<0.10, statistically significant at the 10 per cent level
** p<0.05, statistically significant at the 5 per cent level
*** p<0.01, statistically significant at the 1 per cent level
1. Very-recent immigrants are individuals who have been landed immigrants to Canada for 5 years or less.
2. Recent immigrants are individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.
4. Countries that make up less than 5% of the locations of postsecondary education reported in the 2006 Census.

Note: Each regression model also includes background variables discussed in the report.
Source: Author's calculations based on data from the 2006 Census of Population.

First of all, we see that the selection term is positive and statistically significant at the 1% level for each of our four demographic categories, namely: all, very-recent, recent and established immigrants. This indicates that regardless of the duration of permanent residence, the unobserved elements that influenced occupational preferences of immigrants with a postsecondary education were positively associated with the unobserved elements that determined their reservation wage, i.e., the lowest wage these individuals could have accepted when they started searching for a paid job in Canada. It is worth stressing however that the coefficient of the selection term for very-recent immigrants exceeds those for recent, established and all immigrants by 24.42% (=[(0.106-0.078)/0.106]*100), 17.92% (=[(0.106-0.087)/0.106]*100) and 13.21% (=[(0.106-0.087)/0.106]*100) respectively. Intuitively, it may be that very-recent immigrants were more likely to have tighter initial budgets than other immigration cohorts. This in turn could have possibly increased the cost of any decision to delay labour market participation for the sake of, for example, taking additional training.

Even when we consider all landed immigrants with a postsecondary education aged 25 to 64, we find that location of study remains significantly associated with employment earnings. Concerning all immigrants employed in the wage sector, for instance, we find that almost all foreign-educated immigrants earned substantially less, on average, than those who completed their postsecondary studies in Canada, other things held equal. Likewise, the sensitivity analysis shows that relative to Canada-educated immigrants, those who obtained their highest postsecondary certificate, diploma or degree China (-39%), Pakistan (-44%), South Korea (-44%), Russia (-42%) or Iran (-37%) experienced the largest earnings disadvantage, whereas those who graduated in the United Kingdom had no wage penalty.[33] Further, immigrants who completed their highest postsecondary studies in the United States or France had, on average, a smaller earnings disadvantage vis-à-vis those who completed their postsecondary education in Canada, at -6% and -7%, respectively.

The analysis of the predicted earnings effects of location of study by immigration cohort produces conclusions qualitatively similar to those obtained in Section 7.2. Among postsecondary-educated immigrants classified as being undereducated or correctly-matched employees, postsecondary graduates from the United States, the United Kingdom and France were the only internationally-educated immigrants having a wage premium over the comparison group of Canada-educated immigrants. A similar earnings pattern is observed, to some extent, among immigrants with a postsecondary education aged 25 to 64 who landed more than a decade ago (i.e., established immigrants) and were employed in the Canadian wage sector in 2006. Arguably, therefore, our key conclusions do not especially suffer from differences in unobserved characteristics between immigrants and the Canadian-born.

8.2 Sensitivity analysis for the "optimal" base group bias

So as to perform this sensitivity analysis,[34] we start by converting the highest level of education of each individual aged 25 to 64 into years of schooling, based on the structure of education in Canada. Accordingly, we allocated 20, 23 and 26 years of schooling to bachelor's degree, master's degree and doctorate degree holders, respectively.[35] Next, following prior research (see for instance, Ferrer, Green and Riddell, 2006; Hanushek and Kimko, 2000), we determined individuals' years of potential Canadian labour market experience (hereafter referred to as 'experience') as follows.

$$\text{Experience} = \begin{cases} \text{Age} - (\text{schooling} + 6) & \text{if Canadian-born} \\ \text{Age at immigration} - (\text{schooling} + 6) & \text{if immigrant} \end{cases}$$

We did not account for labour market experience accumulated abroad because there is some indication that the payoff to the latter is heavily discounted in Canada's labour markets (see for instance, Ferrer, Green and Riddell, 2006). Third, we computed five quintiles of potential Canadian labour market experience, namely: 13 years or less (first quintile); 13 to 21 years (second quintile); 21 to 29 years (third quintile); 29 to 37 years (fourth quintile) and; 37 years and over (fifth quintile).[36] We then assigned individuals to those mutually-exclusive categories with respect to their level of potential employment experience. Finally, we re-ran the multivariate analyses for each of the five quintiles of potential Canadian labour market experience using the methodology suggested by Trost and Lee (1984) for the correction of selection bias.

Our rationale for this sensitivity analysis is as follows. If the comparative advantage enjoyed by the Canadian-born in the allocation process of well-paying jobs is mainly due to their higher average stock of Canadian employment experience (as compared to immigrants), we should expect such an earnings premium to either disappear or diminish remarkably when quintiles of potential labour market experience are considered separately. Table 9 reports the estimated effects of location of study on the employment earnings of postsecondary-educated prime-aged immigrants, by quintile of potential Canadian labour market experience, as compared to the Canadian-born. First, it is important to notice that unlike the multivariate analysis conducted in Chapter 7, the omitted category is quintile-specific, i.e., it consists of postsecondary-educated Canadian-born individuals aged 25 to 64 who belonged to the same quintile of employment experience as postsecondary-educated immigrants aged 25 to 64. As in Section 7.1 and for the same reasons, Table 9 contains only relative earnings by location of study.

Table 9

Relative effect of location of postsecondary study on employment earnings of immigrants aged 25 to 64, by quintile of years of potential Canadian labour market experience, Canada, 2006

Location of postsecondary study	Quintiles of years of potential Canadian labour market experience									
	First quintile (13 years or less)		Second quintile (13 to 21 years)		Third quintile (21 to 29 years)		Fourth quintile (29 to 37 years)		Fifth quintile (37 years or over)	
	Coefficient	standard error	Coefficient	standard error	Coefficient	standard error	Coefficient	standard error	Coefficient	standard error
Canada	0.004	(0.008)	-0.053***	(0.008)	-0.112***	(0.008)	-0.074***	(0.007)	0.083***	(0.007)
United States	0.042***	(0.015)	-0.074***	(0.021)	-0.127***	(0.026)	-0.134***	(0.019)	0.036	(0.034)
United Kingdom	0.132***	(0.016)	0.132***	(0.020)	0.036**	(0.017)	-0.041**	(0.017)	-0.079***	(0.028)
Philippines	-0.029**	(0.012)	-0.092***	(0.015)	-0.164***	(0.026)	-0.169***	(0.022)	0.086	(0.106)
India	-0.186***	(0.013)	-0.187***	(0.022)	-0.204***	(0.028)	-0.234***	(0.033)	0.006	(0.097)
China	-0.292***	(0.013)	-0.234***	(0.033)	-0.241**	(0.103)	-0.300**	(0.120)	-0.129	(0.279)
Pakistan	-0.436***	(0.020)	-0.332***	(0.065)	-0.435***	(0.068)	-0.429***	(0.070)	0.252	(0.228)
Poland	-0.176***	(0.031)	-0.178***	(0.014)	-0.213***	(0.025)	-0.175***	(0.056)	-0.287	(0.234)
France	-0.081***	(0.019)	-0.004	(0.042)	-0.101*	(0.053)	-0.131***	(0.048)	0.120**	(0.048)
South Korea	-0.345***	(0.032)	-0.490***	(0.072)	-0.469***	(0.105)	-0.339***	(0.096)	-0.127	(0.181)
Romania	-0.226***	(0.018)	-0.143***	(0.028)	-0.199***	(0.068)	-0.222	(0.263)	0.041	(0.152)
Hong Kong	0.002	(0.021)	0.051*	(0.026)	-0.041	(0.063)	-0.080	(0.064)	-0.093	(0.174)
Russia	-0.369***	(0.019)	-0.392***	(0.052)	-0.470***	(0.109)	-0.153	(0.132)	-0.017	(0.298)
Germany	-0.081**	(0.032)	-0.030	(0.048)	-0.171***	(0.065)	-0.195***	(0.056)	-0.126*	(0.066)
Iran	-0.273***	(0.029)	-0.279***	(0.049)	-0.262*	(0.134)	-0.546***	(0.187)	0.226***	(0.013)
Other countries[1]	-0.191***	(0.008)	-0.129***	(0.012)	-0.153***	(0.015)	-0.167***	(0.017)	-0.145***	(0.026)
Selection term	0.034***	(0.005)	0.074***	(0.004)	0.092***	(0.004)	0.108***	(0.005)	0.133***	(0.007)
R^2	0.341		0.363		0.362		0.339		0.326	
Population	1,390,552		1,462,977		1,454,384		1,476,799		1,052,174	

* p<0.10, statistically significant at the 10 per cent level

** p<0.05, statistically significant at the 5 per cent level

*** p<0.01, statistically significant at the 1 per cent level

1. Countries that make up less than 5% of the locations of postsecondary education reported in the 2006 Census.

Note: Each regression model also includes background variables discussed in the report.

Source: Author's calculations based on data from the 2006 Census of Population.

Our results indicate that the coefficient of the sample correction term is positive and statistically significant at the 1% level for each quintile of potential Canadian employment experience. However, we observe that the magnitude of this estimate increases remarkably with the number of years of potential labour market experience. The implications of this result are twofold. First, the unobserved characteristics of Canadian-born and permanent residents with a postsecondary education aged 25 to 64 who worked as paid employees were positively correlated with the unobserved components which determined their reservation earnings. Second, the influence of some unobserved characteristics (such as strong ties to friends, neighbours and co-workers) in employees' self-selection into paid work becomes increasingly important over their working lives.

As Table 9 shows, our key conclusions do not especially suffer from a broader definition of the base group: redesigning the sample so as to account for differences in Canadian potential labour market experience leads to conclusions qualitatively similar to those obtained in Section 7.2. For instance, our results suggest that, on average, the Canadian-born with a postsecondary education aged 25 to 64 in 2006 enjoyed a statistically significant wage premium over almost all their immigrant counterparts, regardless of the quintile of potential employment experience. Similarly, for each of the first four quintiles of potential labour market experience, immigrants with a postsecondary education aged 25 to 64 who completed their highest studies in Pakistan, China, South Korea or Russia experienced larger earnings penalties in Canada. In contrast, those with either no, or a smaller, earnings disadvantage vis-à-vis their Canadian-born counterparts were those who had completed their studies in the United Kingdom, the United States or France.

Regarding postsecondary-educated immigrants aged 25 to 64 with at least 37 years of potential labour market experience in Canada, our estimates indicate that the location of study had either a smaller deleterious effect or a neutral impact on their employments earnings (relative to the Canadian-born of comparable potential work experience). Further, we note that among most experienced workers, immigrants who completed their postsecondary education in Iran, Canada and France earned on average, respectively 25%, 13% and 9% more than their Canadian-born counterparts, respectively. To the extent that variations in earnings differentials between immigrants with a postsecondary education and the Canadian-born reflect differences in international skills transferability, one implication of these results is, once more, that foreign-educated immigrants with relatively low initial or mid-term earnings may have relatively high earnings at the end of their professional careers in Canada. Intuitively, this could be possible because the extension of the duration of permanent residence: (i) provides foreign-educated immigrants with a better knowledge of practices relevant to Canadian jobs leading to the top of the earnings distribution; and (ii) increases employers' knowledge of the implications of foreign postsecondary education for the productivity of the internationally trained workforce, especially for positions where postsecondary education is very important.

Chapter 9

Discussion

The importance of location of study on the post-migration labour market success of internationally-educated immigrant workers with a postsecondary education has been the focus of much recent Canadian research. But, most prior studies use databases containing no information that allows the location of study to be directly tracked. One solution often proposed in the literature is to resort to the country of birth. A salient assumption in prior research is that this measure can adequately capture location of study, irrespective of international migration dynamics. Interestingly, data not reported here show that among landed immigrants with a postsecondary education aged 25 to 64 who completed their studies outside Canada, the correlation between the country of birth and the location of highest degree completion is: 0.59 when countries are considered separately; 0.68 when countries are regrouped by per capita national income, and; 0.71 when countries are regrouped by geographical regions. These results imply that the country of birth is an imperfect indicator of the origin of skills acquired via education.

9.1 Contribution of the current study

Our report used descriptive and multivariate techniques to compare different cohorts of internationally-educated immigrants to the Canadian-born with respect to labour force status, earnings and the match between occupation and required schooling. Unlike most prior Canadian literature, we took advantage of the information on location of postsecondary education completion first collected by the Census in 2006 Census and simultaneously examined the labour market success of immigrants in terms of their labour force status, wage earnings and the match between jobs and required education.

We found that immigrants' labour market outcomes vary by location of study: those who completed their postsecondary education in the United Kingdom, France, the United States or, to some extent in Germany, were much more likely to do well on Canada's labour markets in terms of employment rates and earnings, regardless of immigration cohort compared to those who completed their postsecondary studies in any other foreign country, especially China, the Russian Federation, Pakistan and South Korea.

The immigration-based research conducted in other countries, such as the United States and Australia also provides evidence suggesting that post-migration labour market outcomes of immigrants are sensitive to their location of study. For instance, Chiswick, Cohen and Zach (1997) show that in the United States, while employment ratios for European or Canadian immigrants are similar to those of Mexican immigrants, they are higher than those of Asian immigrants. Bratsberg and Terrell (2002) show that in U.S. labour markets, education from northern Europe, Australia or Canada is more highly remunerated than education from Central America or the Caribbean.

In terms of Australian evidence, Liebig (2007) finds that immigrants with an Australian education have much better chances of securing paid employment than those with foreign degrees. He attributes this finding at least in part to the existence of imperfect transferability of skills between source countries and Australia. Thapa and Gorgens (2006) show that among female immigrants, those possessing an Australian educational qualification increase their likelihood of finding a first paid job at arrival in Australia. They also find that having a foreign degree assessed as being equivalent to Australian degree generated a similar positive impact on the employment perspectives of female immigrants to Australia.

Arguably, therefore, intra-group variations observed in the post-migration labour market success of Canada's immigrants with foreign postsecondary credentials are not a Canadian idiosyncrasy. Instead, as previously suggested in the international research (see, for instance, Chiswick, Cohen and Zach, 1997; Chiswick and Miller, 2008; 2009; Liebig, 2007) and recent Canadian studies (see, for instance, Ferrer and Riddell, 2008; Gilmore and Le Petit, 2008; Alboim, Finnie and Meng, 2005), they may reflect at least in part the fact that a typical Canadian employer who uses education to sort prospective labour market participants by potential productivity level may attach greater economic value to educational qualifications from countries that have linguistic, economic and socio-cultural similarities to Canada. Conversely, that employer may undervalue educational qualifications from other countries, especially those from China, Pakistan, South Korea, the Russian Federation and Iran. In other words, the average prospective employer may not understand very well, and so may not be in a position to evaluate, the properties of postsecondary credentials from Pakistan, the Russian Federation, China or South Korea for the productivity of prospective labour market participants.

9.2 Other findings

This study provided several other findings. Regarding labour market status, for instance, our multivariate results indicated that, on average, very-recent and recent immigrants who completed their postsecondary education in Canada were less likely to be overeducated and more likely to be out of the labour market, relative to the Canadian-born. When employed in the wage sector, they earned, on average, less than their Canadian-born counterparts, regardless of the level of education-job match. These results led us to argue that individual accumulation of skills through the Canadian postsecondary education is not itself the engine of the labour market success of immigrants to Canada.

Our estimates indicated that among correctly-matched employees, recent immigrants with a postsecondary education completed in the Philippines and or India earned, on average, more than their Canadian-born counterparts. Also, recent immigrants educated in the Philippines and classified as being undereducated enjoyed, on average, a significant wage advantage over their Canadian-born counterparts, even after controlling for other determinants of employment earnings in Canada. The earnings premium enjoyed by recent immigrants with a postsecondary education from the Philippines is surprising because prior research (for instance, Lindsay, 2001; England and Stiell, 1997) indicates that immigrants from the Philippines collectively experience a significant comparative disadvantage in the allocation process of well-paid job on Canada's labour markets. A disaggregation of our data by fields of postsecondary study led us to argue that, when given the opportunity to look for paid work that may be more suitable to their educational credentials in Canada, recent immigrants who completed their postsecondary education in the Philippines or in India were more likely to find a high-paying job, as compared to the Canadian-born and other internationally-educated immigrants.

9.3 Limitations and caveats

To start, we did not directly address the question of what influence location of study has on the speed of convergence of labour market outcomes of highly-educated prime-aged immigrants with those of their Canadian-born counterparts. Such an analysis requires longitudinal data since labour market behaviour is a function of permanent idiosyncrasies and states dependency. For example, states dependency may rise from the absence of temporal separability between the portions of time spent on non-market activities over a number of successive periods (Hotz, Kydland and Sedlacek, 1988). They may also result from the fact that the costs of searching for new paid employment vary with the quality of the current and previous jobs (Eckstein and Wolpin, 1990).

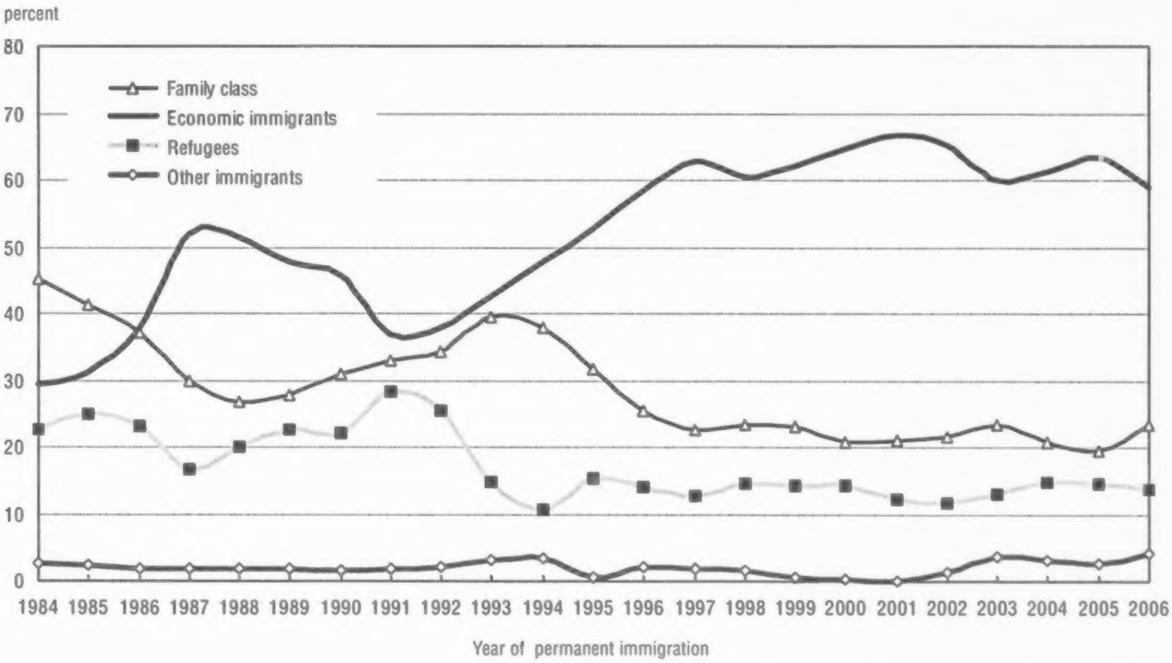
Also, employment history may send a signal to potential employers concerning the quality of productive attributes of prospective labour market participants, so that some individuals frequently end up at the tail of the paid employment distribution, despite their higher educational qualifications (Lee and Tae, 2005). Moreover, unobservable characteristics that drive some people to initially accept jobs that economically undervalue their labour force skills may be similar to those which keep them at the tail of the earnings distribution for a long time. It should therefore be kept in mind that the analysis reported here does not allow us to directly predict the impact of location of study on labour market "*assimilation*" of highly-educated immigrants after their arrival in Canada. This is an area that should be pursued in future research should longitudinal analysis become possible, especially if the fraction of immigrant workers who received their highest postsecondary education abroad grows substantially.

Likewise, it is worth stressing that for the sake of comparison, we follow prior Canadian research (see, for instance, Plante, 2010; Gilmore and Le Petit, 2008; Mata, 2008) by allocating immigrants into three broad and mutually-exclusive categories depending on the duration of permanent residence in Canada, namely: very-recent, recent and established immigrants. But, location of study could have differential effects on particular arrival cohorts either because of transitory or permanent fluctuations in the value allocated to foreign education in the host country's labour markets over time or because of the fact that unobserved factors determining labour productivity (such as motivation, talent, etc.) are fixed within an arrival cohort (Lalonde and Topel, 1992). Given that the data used in this report are cross-sectional, our main estimates may thus be capturing, to some extent, cohort effects rather than the dynamics of landed immigrants' integration into the Canada's labour markets.

Authors such as Edin, Lalonde and Aslund (2000), Borjas and Bratsberg (1996) and Lalonde and Topel (1992) argue that emigration of landed immigrants may not be a residual phenomenon in many destinations favoured by international migrants (such as the United States, Canada, Australia, New Zealand, etc.). Further, according to authors such as Edin, Lalonde and Aslund (2000), economic migrants, especially those who arrived within the previous five years, may have higher emigration rates than other immigrant categories because they tend to compare the present discounted value of earnings in the host country to that in the source country. Hence, standard measures of labour market success of immigrants in the host country (such as labour force status, employment earnings and the match between their jobs and required qualifications), especially shortly after arrival, may be biased to the extent that "there is non-random emigration of immigrants."

As shown in Chart 3, long-term immigrants to Canada are not uniquely selected on the basis of their skills and ability to contribute to Canada's economy or successfully enter its labour markets. However, there is a constant overrepresentation of economic immigrants (i.e., skilled workers, business immigrants, and live-in caregivers) among people accepted for permanent residence in Canada starting in 1987, with a historical peak in 2001, at 67%.

Chart 3
Percentage distribution of permanent migration to Canada, by category, 1984 to 2006



Source: Citizenship and Immigration Canada (CIC), 2008.

Selective emigration of landed immigrants, especially economic immigrants, could be non residual in Canada because the empirical migration research (see, for instance, Mayda, 2005) has taught us that international migration is determined by economic considerations (such as poverty, unemployment, prospects for higher wages, improved standard of living). Further, the recent inclusion of labour mobility provisions for many professional occupations in international agreements such as the North American Free Trade Agreement and the General Agreement on Trade in Services of the World Trade Organization has significantly eased international labour force mobility, especially between Canada and the United States (Blouin, 2005).

Thus, if a sizeable proportion of immigrants with a postsecondary education aged 25 to 64 who completed their postsecondary studies outside Canada, especially economic immigrants, emigrated back to their home country or to a third country, estimates of the impact of location of study on labour force status and earnings may suffer to some extent from selection bias. This is because constructed arrival cohorts only account for those landed immigrants who stayed in Canada, not for those who left. Indeed, if internationally-educated immigrants who remained in Canada have poorer (better) labour market outcomes than those who left, our results may suffer from an underestimation (overestimation) of variations of the gaps in earnings and employment status between immigrants from different locations of study and the Canadian-born.

Given that the testing of selection bias is beyond the scope of our analysis, we can only speculate that the global picture of immigrants' labour market success in Canada would have not changed dramatically if internationally-educated immigrants who possibly used Canada as a step for other North American labour markets have better outcomes would have they stayed. Nevertheless, the caveat that our findings could partly reflect the effect of exit among some high-earners educated abroad needs to be kept in mind. To cite Jasso, Rosenzweig and Smith (2002), it could be that some of our results "confound the skills transferability of an individual over time and changes in the skill composition of immigrants due to selective emigration."

As Chart 3 shows, Canada generally accepts international migrants under economic, humanitarian and family considerations. Understandably, therefore, the negative effect of pre-immigration schooling on the labour market outcomes of a sizeable number of immigrants who landed as refugees may be explained, for instance, by problems experienced in providing prospective employers with concrete proof of self-reported educational attainment. It would have been preferable to consider asylum-seekers and refugees as a separate category. Unfortunately, the data from the 2006 Census of population are not available in a form that allows us to identify the routes by which immigrants entered Canada.

Chapter 10

Concluding remarks

The purpose of this study was to examine the empirical relationship between the relative labour market success (i.e., labour force status, wage earnings and the match between occupation and required schooling) of highly-educated immigrants to Canada and the location of study of their highest postsecondary certificate, degree or diploma. Much of the motivation for this empirical research came from recent Canadian research (see, for instance, Ferrer and Riddell, 2008; Gilmore and Le Petit, 2008; Alboim, Finnie and Meng, 2005) and international evidence (see, for instance, Chiswick, Cohen and Zach, 1997; Chiswick and Miller, 2008; 2009; Liebig, 2007) suggesting that human capital (i.e., education and/or labour market experience) is not fully transferable across countries. Using data from the 2006 Census of Population and descriptive and multivariate techniques, we compared different immigrant cohorts with a postsecondary education aged 25 to 64 to the Canadian-born with similar characteristics.

After accounting for a number of labour market characteristics, we found that compared to the Canadian-born, immigrants were more likely to be out of the labour force and less likely to be paid employees or self-employed. Further, we found supporting evidence for the hypothesis that intra-group variations in the labour market success of internationally-educated immigrants may be explained, at least in part, by the fact that in Canada, many stakeholders (such as prospective employers, regulatory bodies, assessment agencies, etc.) do not necessarily value postsecondary educational qualifications from all source regions on a unique standard. Compared to the Canadian-born, for example, very-recent immigrants who completed their postsecondary studies in Pakistan and South Korea were, respectively, 27% and 22% more likely to be out of the labour force. In contrast, those who completed their postsecondary education in the Philippines (+2%), India (+7%) or the Russian Federation (+6%) were only slightly more likely than the Canadian-born to be out of the labour force.

We also found evidence suggesting that, in the absence of Canadian postsecondary schooling, not all immigrants benefit from their length of time as permanent residents in Canada. Compared with the Canadian-born, for example, immigrants who completed their highest level of postsecondary education in Pakistan or South Korea were more likely to be out of the labour force and less likely to be paid employees, even when they had been permanent residents of Canada for at least 10 years. In contrast, established immigrants who completed their highest postsecondary studies in Canada, the United States, the United Kingdom or France had on average the same probability as the Canadian-born of being undereducated employees or self-employed, all other things being equal.

Our estimates indicated that an average employed Canadian-born individual with a postsecondary education aged 25 to 64 was likely to have an earnings advantage over his / her immigrant counterpart, the magnitude of which depended on country of highest postsecondary education and immigration cohort. For example, the typical Canadian-born with a postsecondary education was likely to earn, on average, 62% more than a very-recent immigrant who completed his / her postsecondary studies in Pakistan or the Russian Federation. In contrast, the average earnings disadvantages associated with very-recent immigrants who completed their highest level of postsecondary education in Canada, the United States and the United Kingdom were -32%, -30% and -25%, respectively. Our multivariate results showed the importance of accounting for selection bias when estimating the determinants of employment earnings in Canada. Last but not least, we investigated the extent to which the results may reflect differences in characteristics such as immigration status and potential Canadian labour market experience. Our sensitivity analyses offered similar conclusions, that is, relative to the Canadian born with similar observed attributes, immigrants with a postsecondary education aged 25 to 64 were more likely to experience a wage disadvantage that varied with location of study and duration of permanent residence in Canada.

Our findings led us to conclude that many employers who use education to assess the potential productivity of prospective labour market participants may perceive the "outcomes" of the British, American, French and German postsecondary education systems as having components that are more easily transferable to Canada than the "outcomes" of the Chinese, Russian Federation, Pakistani and South Korean postsecondary education systems. Our results lend support to the idea that many Canadian employers and several other stakeholders (such as regulatory bodies, assessment agencies, etc.) may not value postsecondary educational qualifications from all source regions on a unique standard.

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Endnotes

1. It has been suggested for instance that in the host country, successful labour market integration of highly-educated long-term immigrants can alleviate the expected shortage of skilled workers in key industries and prevent wage inflation potentially detrimental to the competitiveness of the national economy (see, for instance, Kahn, 2004; Hansen, 1993). Further, a recent report by the Conference Board of Canada suggests that every one-percentage-point growth in Canada's immigration can raise the value of its imports and exports by 0.21% and 0.11% respectively, and immigration bolsters innovation and foreign direct investments in Canada (The Conference board of Canada, 2010).
2. It is also worth stressing that imperfect transferability of human capital skills (i.e., education and/or experience) across labour markets has not only been associated with differences in formal aspects of educational systems. It has alternatively been linked to barrier to entry into specific occupations and economic discrimination against immigrants (see, for instance Baker and Benjamin, 1994; Pendakur and Pendakur, 1998; 2002b).
3. From 1981 to 2001 for instance, the share of immigrants from Eastern Europe, South Asia (India, Pakistan), East Asia (China, Korea, and Japan), West Asia (Iraq, Iran, and Afghanistan) and Africa increased from 35% to 72% (Picot, 2008).
4. Such as age, gender, labour marker experience, marital status, knowledge of official languages, business cycles, family background, etc.
5. It should be noted that the Labour Force Survey has been collecting data on location of study since January 2006. However, the LFS is a sample survey and so cannot offer the level of detail made possible by the Census.
6. This includes apprenticeship or trade degrees, College, CEGEP or other non-university degrees, university degrees below bachelor level, university degree above the bachelor's degree, degree in medicine, dentistry, veterinary medicine or optometry, master's degree and earned doctorates.
7. This implicitly represents a limitation to our study because a sizeable share of the Canadian labour force has secondary education or less despite the well-documented increase in postsecondary education participation among Canadian adults in the last decades (see, for instance, King, 2009; Picot, 2008).
8. Although the Canadian-born with a postsecondary education and aged 25 to 64, who completed their postsecondary education in foreign countries represent a very small category, we choose to include them in our population of interest because they are not culturally different from those who completed their postsecondary studies in Canada. In addition, the 2006 Census does not provide any information about the geographical source of the degree, diploma or certificate that determined the reported labour market status. Since education is a cumulative process, some Canadian-born who achieved their postsecondary schooling abroad may have also used their Canadian educational qualifications to obtain their current job.
9. For example, education-job mismatch equilibrium may arise in the labour market if many prospective employers tend to hire less-educated workers while the labour supply heavily consists of highly educated people. In that situation, all less-educated workers will occupy jobs that match their educational qualifications, while some highly educated workers will have no choice but to take jobs that essentially have lower education requirements.
10. See Chiswick and Miller (2009), Wald and Fang (2008) and Hartog (2000) for more details.
11. Hartog (2000) who ran estimates with each of these approaches concluded that the results are not sensitive to the approach selected in measuring the education threshold. The study by Chiswick and Miller (2009) also reached to a similar conclusion following multivariate analyses using both the job analysis approach and the realized-matches approach.

12. Observe that since the 2006 Census has no information about years of education, we used the hierarchical structure of the highest level of schooling to perform that classification. We assigned a value of 1 to any individual with no degree or diploma and the highest value, 13, to anyone with a doctorate. This does not mean that a college education is qualitatively inferior to a master's degree, for example. The classification simply means that it takes more years of study to earn a master's degree than to obtain a college diploma.

13. For example, Papua-New Guinea, the Gaza Strip, Turkmenistan and Nauru.

14. Unfortunately however, the samples sizes were too small to have larger immigrant groups with a postsecondary education and aged 25 to 64, who completed their studies in Africa or Latin America, two groups often experiencing long-term integration difficulties.

15. Given that immigrants traditionally enter Canada under economic, family and humanitarian considerations, the current overrepresentation of some recent and very recent immigrants in the highly-educated workforce could also reflect at least in part, the fact that Canada is increasingly attracting individuals from countries placing a higher value on education or labour market success. We should also stress that most countries selected in this study do not have a college system. Therefore, by definition, most of postsecondary education held by immigrants will be university.

16. King (2009); Picot (2008) and Kahn (2004).

17. Ibid.

18. Ibid.

19. Such as field of study, quality of Canadian languages knowledge and pre-immigration labour market experience.

20. Ibid.

21. Ibid.

22. As underlined in many household surveys, the annual taxable earnings of the self-employed even derived from tax registries might underestimate their true annual earnings. Further, the self-employed are associated with issues that are beyond the scope of our study. These include self-selection in professional occupations: educational credentials of the self-employed are traditionally assessed by consumers whereas prospective employers value those for other wage sector workers. Due to their employment status thus, the self-employed have a lower propensity than other paid workers to automatically rely on educational signal when participating in the labour market, especially in occupations where educational credentials are not crucial (Heywood and Wei, 2004).

23. This problem is well-known in economics and related areas as sample selection bias (see, for instance, Heckman, 1979).

24. Ibid.

25. Two thirds of all people who migrated to another country between 1975 and 1980, for example, went to Australia, Canada or the United States (Friedberg and Hunt, 1995). As of 2005 moreover, those three countries had the highest proportions of foreign-born people: 24.6%, 19.2% and 11.7% respectively (Hawthorne, 2006).

26. As measured by the Global Competitiveness Index (GCI) of the World Economic Forum, Canada has one of the world's most competitive economies. As of 2006-2007 for instance, Canada observed a higher GCI (often taken as an overall competitiveness measure), i.e., 5.37 in comparison with the other classical immigration country with strong selection policy, namely, Australia (5.29) and with other country members of the Organization of Economic Cooperation and Development such as France (5.31), New Zealand (5.16), South Korea Republic (5.13), Belgium (5.29), Spain (4.77) and Italy (4.46).

27. Ibid.

28. The 2006 Census dictionary defines visible minorities as "persons other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour".

29. Marginal effects are all calculated at means of explanatory variables.

30. This result highlights the importance of performing a multivariate analysis. Indeed, descriptive statistics reported in Table 7 indicate that recent immigrants with postsecondary education and aged 25 to 64, who completed their highest degree in the Philippines, had a comparative wage disadvantage regardless of the level of education-job match and the latter is particularly higher in the undereducated group, at, -42.4%. As shown in regression results, this is not true at all.

31. We are grateful to an anonymous referee for pointing this out.

32. Much of our motivation for comparing immigrants with the Canadian-born came from the fact that to the best of our knowledge, there is no empirical indication that Canada's labour markets are segmented between these two demographic groups: yet, the literature has taught us that the Canadian-born and immigrants may be mainly different in terms of key productivity-related attributes and some family and personal factors. In doing so also, we were able to examine the extent to which our results are in line with prior Canadian and international immigration-based research.

33. Recall that these values were obtained via a formula proposed by Kennedy (1981). To remind the reader once more how this formula works, we will use the "All immigrants" group as an example: our estimates show that immigrants with a postsecondary education and aged 25 to 64, who completed their highest postsecondary studies in China earned on average $39\%[=(EXP[-0.494-0.5*(0.010)^{2}]-1)*100]$ (Table 8; columns 8-9; row 5)] less than their Canadian-born counterparts, everything else held constant.

34. In order to investigate from a multivariate perspective, the extent to which the location of highest postsecondary study affects relative labour market success of prime-aged (25 to 64) immigrants to Canada, our study followed the empirical immigration literature (for an overview of some recent Canadian studies, see for instance Picot and Sweetman, 2005) by considering all the Canadian-born with a postsecondary education and aged 25 to 64 as the reference category. We found it natural to do so because the Canadian-born make up the largest demographic sub-group in our population of interest and outnumber immigrants for each of the measured attributed taken into account during our multivariate analyses. But, the argument could be made that the choice of a broader reference category provides a possible explanation as to why earnings differentials may exist between the Canadian-born and most immigrants, regardless of duration of residence and origin of skills acquired through education in the source region or country. Put differently, one could be reasonably argue that our estimate may reflect differences in terms of work experience relevant to Canada's economy rather than differences in terms of transferability of skills acquired through the postsecondary education system in the source or graduation area. Because, although immigrants surpass Canadian-born in the highly-educated workforce for many years, the latter may have on average, more years of experience relevant to Canada's labour market or more firm-specific training than the former given that in Canada, the baby-boom generation (those individuals born between 1946 and 1966), i.e., the bulk of the Canadian workforce, is increasingly ageing. In turn, this may have put immigrants with a postsecondary education and aged 25 to 64, at comparative disadvantage in the allocation process of well-paid jobs on Canada's labour markets, regardless of the immigration cohort and the location of highest postsecondary study. We thus needed to clarify our key results.

35. Of course, it would be preferable to use direct information on the number of years of schooling. Unfortunately, the data from the 2006 Census of population are not available in this form. The information regarding the formal structure of Canada's education systems can be accessed at the website of the Canadian Information Center for International Credentials under the link: http/www.cicic.ca/386/studying-in-canada.canada.

36. Once more, it would be preferable to rely on statistical information on the duration of full-time or part-time employment in Canada. Unfortunately, the data from the 2006 Census of population are not available in this form. In order to find a consensual method to construct the "optimal" comparison group, literature searches were carried out during winter 2009 and summer 2010 using various combinations of search words in a number of different research databases. We noted that Lalonde and Topel (1992) is the only empirical study which recommends for the analysis of economic integration of immigrants, to compare immigrants to non-immigrant who would have faced similar variations in earnings inequality and relative skill prices. Unfortunately however, this study does not inform us about the best way to proceed, especially when using cross-section data.

Appendixes 11

11.1 The background determinants of labour force status in Canada

Table A.3 reports the predicted effect of the background variables on the likelihood of being: out of the labour force; self-employed; a paid employee who is undereducated; a paid employee who is correctly matched; a paid employee who is overeducated or; a school attendee, as compared to being unemployed.

Table A.3

The background determinants of labour force status in Canada, multivariate results, 25 to 64 year-olds with a postsecondary education, 2006 — Marginal effects

	Non-wage sector		Wage sector employees			
	Out of the Labour market	Self-employed	Under-educated	Correctly matched	Over-educated	**Student**[1]
Background variables	Marginal effects					
A. Major postsecondary field of study						
Education	0.053***	-0.050***	0.029***	0.010***	-0.094***	0.053***
Visual arts	0.008***	0.111***	-0.007***	-0.002***	-0.089***	-0.021***
Humanities	0.025***	-0.002	0.001	-0.0001***	-0.043***	0.019***
Social sciences	0.011***	0.027***	-0.007***	0.001***	-0.037***	0.005***
Life / physical sciences	0.014***	-0.025***	0.018***	0.0002***	-0.036***	0.028***
Mathematics / computer sciences	0.025***	0.004**	0.042***	0.005***	-0.079***	(2)
Engineering sciences	0.003***	0.005***	-0.008***	0.006***	-0.014***	0.008***
Health / welfare sciences	0.005***	0.001	0.004***	0.011***	-0.064***	0.043***
Agriculture	-0.016***	0.066***	-0.023***	-0.001***	-0.007**	-0.018***
Other fields of study	0.014***	0.032***	-0.027***	0.0003**	-0.003	-0.017***
B. Marital status						
Divorced	0.008***	-0.028***	-0.011***	-0.001***	-0.026***	0.051***
Separated	0.008***	-0.027***	-0.011***	-0.001***	-0.022***	0.045***
Single, never married	0.047***	-0.048***	-0.014***	-0.002***	-0.036***	0.043***
Widowed	0.067***	-0.035***	-0.018***	-0.002***	-0.066***	0.049***
C. Gender and Household demographic structure						
The respondent is male	-0.042***	0.061***	0.012***	-0.0002***	-0.014***	-0.017***
He / she lives with at least one child <2, none >5, possibly children 2 to 5 also	0.122***	-0.008***	-0.003***	(2)	-0.055***	-0.059***
He / she lives with none child <2, at least one child 2 to 5, none >5	0.074***	0.001	-0.003***	-0.0002**	-0.038***	-0.035***
D. Generation status						
He / she was born outside Canada (first generation)	0.004	0.020***	0.009***	(2)	-0.053***	0.017***
He / she is born in Canada of at least one foreign-born parent (2nd generation)	0.003***	0.013***	(2)	0.000***	-0.020***	0.004***

Table A.3 concluded

The background determinants of labour force status in Canada, multivariate results, 25 to 64 year-olds with a postsecondary education, 2006 — Marginal effects

	Non-wage sector		Wage sector employees			
Background variables	Out of the Labour market	Self-employed	Under-educated	Correctly matched	Over-educated	Student[1]
	Marginal effects					
E. Status in the economic family, health status and age						
He / she is is not the primary household maintainer	0.061***	-0.009***	-0.015***	-0.002***	-0.042***	0.002***
He / she has health problems that reduce his / her amount of activity	0.118***	-0.025***	-0.017***	-0.002***	-0.096***	0.015***
Age (in years)	0.008***	0.003***	(2)	-0.0001***	-0.004***	-0.007***
F. Visible minority status and official language spoken						
He / she belongs to the visible minority group	0.009***	-0.034***	-0.013***	-0.001***	0.013***	0.023***
He / she speaks English	-0.068***	-0.008	0.021***	0.003***	0.032***	0.022***
He / she speaks French	-0.053***	-0.030***	0.023***	0.005***	0.016**	0.042***
He / she speaks English and French	-0.049***	-0.019***	0.019***	0.004***	-0.005	0.051***
H. Area and province of residence 1 year ago						
He / she lived in a rural area	0.004***	0.049***	-0.009***	-0.001***	-0.029***	-0.014***
The province of residence is not applicable	0.240***	-0.033***	-0.009***	-0.002***	-0.199***	-0.011***
He / she lived in Newfoundland and Labrador	0.030***	-0.065***	-0.012***	-0.0003**	0.042***	-0.001
He / she lived in Prince Edward Island	-0.018***	-0.018***	-0.005***	-0.0004*	0.054***	-0.012**
He / she lived in Nova Scotia	0.012***	-0.037***	-0.007***	-0.001***	0.047***	-0.016***
He / she lived in New Brunswick	0.011***	-0.036***	-0.005***	(2)	0.051***	-0.021***
He / she lived in Quebec	0.017***	0.005***	-0.008***	-0.001***	-0.030***	0.013***
He / she lived in Manitoba	-0.018***	-0.011***	0.002***	-0.0003***	0.003	0.026***
He / she lived in Saskatchewan	-0.026***	0.022***	0.002***	0.0002***	(2)	0.003
He / she lived in Alberta	-0.022***	0.026***	0.001***	-0.0003***	-0.009***	0.008***
He / she lived in British Columbia	-0.001	0.024***	-0.005***	-0.001***	-0.030***	0.014***
He / she lived in Yukon	-0.054***	-0.004	0.013***	-0.001	0.004	0.042***
He / she lived in Northwest Territories	-0.043***	-0.04***	0.019***	0.001	0.032***	0.036***
He / she lived in Nunavut	-0.024***	-0.082***	0.026***	(2)	0.030***	0.036***
Population	1,165,370	1,116,597	1,025,835	1,526,257	4,284,795	1,235,674
Log pseudo-likelihood	-2,942,804.50					
Pseudo R^2	0.149					

* p<0.10, statistically significant at the 10 per cent level

** p<0.05, statistically significant at the 5 per cent level

*** p<0.01, statistically significant at the 1 per cent level

1. Attended school at some time in the nine-month period between September 2005 and Census Day, May 16, 2006.
2. Indicates that this variable was dropped from the regression model in order to correct for multicollinearity problems.

Note: The regression model also includes an interaction between the location of study and the immigration cohort

Excluded categories are: business / administration, married / common-law; female; people living with none child <25, at least one child 2 to 5 or more, None >5, people living with at least one child < 2, some > 5, children 2 to 5 also, people living with none child < 15, at least one child 15 to 24, children > 24 also,

People living with none child <2, at least one child 2 to 5, children >5 also, people living with none child <6, at least one child 6 to 14, children >14 also; Individuals who were born in Canada and whose parents were also born in Canada; people who are the household maintainer; people who speak neither English nor French;

People without health problems; individuals not in visible minority groups; Ontario residents.

Source: Author's calculations based on data from the 2006 Census of Population.

In line with prior research (see, for instance, Boudarbat and Chernoff, 2010; Sweetman and McBride, 2004; to name few), our results indicate that labour force status was determined by the postsecondary field of study. In comparison with graduates from business / administration fields for instance, individuals with postsecondary fields of study other than agriculture were more likely to be out of the labour market. Self-employment was more likely to be common among people who studied visual arts, agriculture, social / behavioural sciences, mathematic / computer sciences or engineering sciences. However, people with a postsecondary education aged 25 to 64 who studied visual arts were the most likely to be self-employed. In contrast, those least likely to be self employed studied life / physical sciences or education.

Also in line with past studies (see for instance, Boudarbat and Chernoff, 2010; Boyd and Schellenberg, 2007), we find that the postsecondary field of study influenced the level of match between jobs and required qualifications: compared to graduates from business / administration, the undereducation risk was higher among graduates from education, life / physical sciences, mathematics / computer sciences and health / welfare sciences. At the same time, graduates from visual arts, agriculture, social / behavioural sciences and engineering sciences were less likely than those from business / administration fields to be classified as undereducated workers. People who studied education, social / behavioural sciences, life / physical sciences, mathematics / computer sciences, engineering sciences or health / welfare sciences were slightly more likely to occupy professional positions matching their education level compared to graduates from business / administration fields, while those who had studied visual arts, humanities or agriculture were less likely to do so.

Many other background variables determine the labour market status of individuals with a postsecondary education. Rather than being unemployed, for instance, singles were more likely to be out of the labour market or school attendees, and less likely to be self-employed, undereducated employees, correctly-matched employees or overeducated employees, compared to married individuals and people living common-law. In line with prior research (see for instance, Eissa and Liebman, 1996; Keane and Moffit, 1998), our results indicate the existence of gender-based differences in labour force status: compared to an average female with a postsecondary education aged 25 to 64, males were less likely to be out of the labour market, overeducated employees or school attendees, and more likely to be self-employed or undereducated employees.

People with a postsecondary education aged 25 to 64 who belonged to a visible minority group, those who were not primary maintainers and those who experienced health problems that reduced their level of activity inside / outside home were more likely to be out of the labour market or school attendees, and less likely to be self-employed or employed in the wage sector, relative to the unemployed. As uncovered in prior research (see for instance, Baker and Benjamin, 1994; Pendakur and Pendakur, 1998; 2002b), our estimates indicate that the mastery of at least one of Canada's official languages (i.e., English or French) increased the likelihood of securing a professional position in the Canadian wage sector.

Last but not least, we find some geographic differences in the labour market behaviour of individuals with a postsecondary education aged 25 to 64. Relative to the unemployed, for instance, those who lived in Quebec (+5%), Saskatchewan (+2%), Alberta (+3%) or British Columbia (+2%) were slightly more likely than Ontarians to be self-employed while those least likely to display this labour force status lived in Newfoundland and Labrador (-6%). The overeducation risk was slightly higher among those who lived in the Maritimes, i.e., Newfoundland and Labrador (+4%), Prince Edward Island (+5%), Nova Scotia (+5%) and New Brunswick (+5%), and slightly lower for those who lived in Quebec (-3%) or British Columbia (-3%), as compared to Ontarians.

Our results also suggest that in comparison with people with a postsecondary education aged 25 to 64 who lived in Ontario, their counterparts who lived in the Maritimes or Quebec were slightly less likely to be undereducated, while those who lived in western Canada (except British Columbia), Yukon, Northwest Territories or Nunavut were slightly more likely to be undereducated. School attendance was slightly lower among people who lived in the Maritimes, and slightly higher for those who lived in Quebec, western Canada, Northwest Territories or Nunavut compared to Ontarians. In comparison with urban residents, those who lived in rural areas were more likely to be out of the labour market or self-employed, and less likely to be employed in the wage sector or school attendees.

Summing up, the background determinants of labour force status in Canada have the expected signs and match most prior findings for Canada (see for instance Ferrer and Riddell, 2006; Finnie and Frenette, 2003; Hansen, 2006) and other market economies (for a review of international empirical evidence, see for instance, Psacharopoulos and Patrinos, 2002).

11.2 Relative impact of the location of highest postsecondary study on the labour force status of landed immigrants aged 25 to 64 — Marginal effects

Table A.4 shows the partial effect of location of study on the labour market status of immigrants with a postsecondary education and aged 25 to 64 compared with their Canadian-born counterparts. We used these multivariate results to build Charts 1.A to 1.F analyzed in Section 7.1.

To illustrate how Table A.4 works, we will use the group of people not in the labour force as an example. Our estimates show that compared with being unemployed, the average very-recent, recent and established immigrants who completed their postsecondary education in Canada were, respectively, 8% (section A; column 1; row 1), 3.3% [=(0.080-0.047)*100; (section A; columns 2-3; row 1) + (columns 2-3; section B, row 1)] and 1.4% [=(0.080-0.0667)*100; (section A; columns 2-3; row 1) + (section C; columns 2-3; row 1)] more likely to be out of the labour force than the average Canadian-born, all other things being equal.

Table A.4

Relative impact of location of highest postsecondary study on the labour force status of landed immigrants aged 25 to 64 with a postsecondary education—Marginal effects

Location of postsecondary study	Non-wage sector				Wage sector							
	Not in labour force		Self-employed		Undereducated employee		Correctly matched employee		Overeducated employee		School attendees	
	Marginal effects	standard error	Marginal effects	standard error	Marginal effects	standard error	Marginal effects	standard error	Marginal effects	standard error	Marginal effects	standard error
A. Fixed effect of location of immigrants' postsecondary education												
Canada	0.080***	(0.009)	-0.044***	(0.006)	-0.027***	(0.002)	-0.003***	(0.0002)	-0.127***	(0.010)	0.118***	(0.009)
United States	0.185***	(0.015)	-0.009	(0.008)	-0.023***	(0.003)	-0.003***	(0.0003)	-0.118***	(0.013)	-0.036***	(0.006)
United Kingdom	0.133***	(0.015)	-0.007	(0.009)	-0.021***	(0.003)	-0.003***	(0.0003)	-0.061***	(0.014)	-0.044***	(0.007)
Philippines	0.025***	(0.008)	-0.109***	(0.003)	-0.038***	(0.001)	-0.006***	(0.0001)	0.181***	(0.009)	-0.052***	(0.005)
India	0.066***	(0.010)	-0.057***	(0.005)	-0.036***	(0.001)	-0.005***	(0.0001)	0.077***	(0.011)	-0.053***	(0.004)
China	0.075***	(0.010)	-0.041***	(0.005)	-0.037***	(0.001)	-0.005***	(0.0001)	-0.049***	(0.011)	0.052***	(0.008)
Pakistan	0.265***	(0.017)	-0.049***	(0.006)	-0.041***	(0.001)	-0.006***	(0.0001)	-0.133***	(0.015)	-0.044***	(0.006)
Poland	0.125***	(0.029)	-0.040***	(0.015)	-0.038***	(0.003)	-0.006***	(0.0003)	-0.071**	(0.029)	0.009	(0.017)
France	0.127***	(0.016)	-0.015	(0.010)	-0.018***	(0.003)	-0.004***	(0.0003)	-0.052***	(0.016)	-0.044***	(0.006)
South Korea	0.217***	(0.017)	0.092***	(0.013)	-0.036***	(0.002)	-0.006***	(0.0001)	-0.260***	(0.014)	-0.027***	(0.008)
Romania	0.075***	(0.013)	-0.078***	(0.005)	-0.037***	(0.002)	-0.005***	(0.0001)	-0.010	(0.014)	0.048***	(0.010)
Hong Kong	0.155***	(0.031)	-0.016	(0.022)	-0.028***	(0.006)	-0.003**	(0.0010)	-0.108***	(0.035)	-0.005	(0.021)
Russia	0.062***	(0.013)	-0.035***	(0.008)	-0.041***	(0.002)	-0.005***	(0.0002)	-0.036***	(0.015)	0.042***	(0.011)
Germany	0.179***	(0.025)	0.006	(0.016)	-0.035***	(0.003)	-0.005***	(0.0003)	-0.113***	(0.024)	-0.046***	(0.011)
Iran	0.154***	(0.018)	-0.038***	(0.009)	-0.037***	(0.002)	-0.005***	(0.0002)	-0.167***	(0.017)	0.080***	(0.013)
Other countries[1]	0.126***	(0.010)	-0.046***	(0.004)	-0.038***	(0.001)	-0.005***	(0.0001)	-0.088***	(0.010)	0.036***	(0.007)
B. Additional effect of recent-immigrant[2] cohort												
Canada	-0.047***	(0.003)	0.022***	(0.007)	0.006**	(0.003)	0.002***	(0.0004)	0.076***	(0.008)	-0.056***	(0.002)
United States	-0.049***	(0.004)	0.007	(0.010)	0.021**	(0.010)	0.0001	(0.0010)	0.055***	(0.014)	-0.031***	(0.008)
United Kingdom	-0.048***	(0.006)	0.007	(0.011)	0.011	(0.007)	0.001	(0.0010)	0.056***	(0.016)	-0.024**	(0.011)
Philippines	-0.057***	(0.004)	0.054***	(0.020)	-0.006	(0.007)	0.002***	(0.0010)	0.021	(0.017)	-0.012*	(0.007)
India	-0.035***	(0.004)	0.058***	(0.011)	0.008	(0.007)	0.003***	(0.0010)	-0.011	(0.011)	-0.020***	(0.006)
China	-0.038***	(0.004)	0.063***	(0.009)	0.024***	(0.008)	0.004***	(0.0010)	0.021**	(0.010)	-0.072***	(0.003)
Pakistan	-0.045***	(0.004)	0.033**	(0.014)	0.015	(0.016)	0.004***	(0.0010)	0.030*	(0.018)	-0.035***	(0.008)
Poland	-0.049***	(0.012)	0.062*	(0.034)	0.014	(0.023)	0.004	(0.0040)	0.035	(0.039)	-0.061***	(0.014)
France	-0.071***	(0.005)	0.027*	(0.017)	-0.002	(0.008)	-0.0006	(0.0010)	0.086***	(0.019)	-0.036***	(0.011)
South Korea	-0.047***	(0.005)	0.049***	(0.013)	-0.004	(0.011)	0.003*	(0.0020)	0.062***	(0.020)	-0.060***	(0.009)
Romania	-0.069***	(0.005)	0.052***	(0.020)	0.030*	(0.017)	0.009***	(0.0020)	0.031	(0.022)	-0.051***	(0.007)
Hong Kong	-0.044***	(0.011)	0.025	(0.031)	0.015	(0.020)	-0.0007	(0.0020)	0.056	(0.039)	-0.052***	(0.017)
Russia	-0.051***	(0.006)	0.021	(0.014)	0.040*	(0.022)	0.002	(0.0010)	0.048**	(0.021)	-0.058***	(0.007)
Germany	-0.060***	(0.008)	0.042*	(0.023)	0.017	(0.018)	0.002	(0.0020)	0.021	(0.031)	-0.019	(0.022)
Iran	-0.052***	(0.006)	0.045**	(0.020)	0.016	(0.019)	0.003**	(0.0010)	0.047*	(0.026)	-0.054***	(0.008)
Other countries[1]	-0.042***	(0.002)	0.037***	(0.005)	0.017***	(0.004)	0.003***	(0.0004)	0.051***	(0.006)	-0.061***	(0.002)

Table A.4 concluded

Relative impact of location of highest postsecondary study on the labour force status of landed immigrants aged 25 to 64 with a postsecondary education—Marginal effects

	Non-wage sector				Wage sector							
	Not in labour force		Self-employed		Undereducated employee		Correctly matched employee		Overeducated employee		School attendees	
Location of postsecondary study	Marginal effects	standard error	Marginal effects	standard error	Marginal effects	standard error	Marginal effects	standard error	Marginal effects	standard error	Marginal effects	standard error
C. Additional effect of established immigrant[3] cohort												
Canada	-0.066***	(0.002)	0.043***	(0.006)	0.025***	(0.003)	0.004***	(0.0004)	0.086***	(0.007)	-0.087***	(0.002)
United States	-0.072***	(0.002)	0.010	(0.008)	0.017**	(0.007)	0.002***	(0.001)	0.068***	(0.011)	-0.020***	(0.006)
United Kingdom	-0.065***	(0.003)	-0.007	(0.007)	0.014***	(0.005)	0.003***	(0.001)	0.066***	(0.011)	-0.006	(0.009)
Philippines	-0.063***	(0.002)	0.084***	(0.018)	0.010	(0.007)	0.005***	(0.001)	-0.006	(0.014)	-0.026***	(0.005)
India	-0.057***	(0.003)	0.090***	(0.010)	0.011*	(0.006)	0.002***	(0.001)	-0.001	(0.010)	-0.041***	(0.005)
China	-0.054***	(0.003)	0.081***	(0.012)	0.040***	(0.011)	0.004***	(0.001)	0.026*	(0.014)	-0.094***	(0.003)
Pakistan	-0.071***	(0.003)	0.048***	(0.016)	0.043**	(0.020)	0.005***	(0.002)	0.027	(0.021)	-0.048***	(0.009)
Poland	-0.070***	(0.006)	0.023	(0.023)	0.026	(0.023)	0.005	(0.003)	0.099***	(0.030)	-0.077***	(0.008)
France	-0.065***	(0.004)	0.044***	(0.014)	-0.001	(0.006)	0.001	(0.001)	0.037**	(0.017)	-0.012	(0.010)
South Korea	-0.068***	(0.003)	0.048***	(0.013)	0.017	(0.015)	0.006***	(0.002)	0.060***	(0.021)	-0.058***	(0.010)
Romania	-0.065***	(0.004)	0.098***	(0.021)	0.032**	(0.015)	0.007***	(0.001)	0.014	(0.021)	-0.083***	(0.006)
Hong Kong	-0.061***	(0.007)	0.026	(0.029)	0.034	(0.024)	0.001	(0.002)	0.053	(0.038)	-0.049***	(0.015)
Russia	-0.049***	(0.007)	0.048***	(0.018)	0.068**	(0.029)	0.002	(0.001)	0.021	(0.027)	-0.086***	(0.007)
Germany	-0.064***	(0.005)	0.014	(0.017)	0.033*	(0.018)	0.001	(0.001)	0.030	(0.026)	-0.009	(0.017)
Iran	-0.070***	(0.004)	0.107***	(0.025)	0.004	(0.015)	0.001	(0.001)	0.047*	(0.027)	-0.085***	(0.006)
Other countries[1]	-0.066***	(0.001)	0.056***	(0.005)	0.024***	(0.003)	0.005	(0.0004)	0.063***	(0.005)	-0.077***	(0.002)
Population	1,165,370***	...	1,116,597	...	1,025,835	...	1,526,257	...	4,284,795	...	1,235,674	...

... not applicable

* p<0.10, statistically significant at the 10 per cent level

** p<0.05, statistically significant at the 5 per cent level

*** p<0.01, statistically significant at the 1 per cent level

1. Countries that make up less than 5% of the locations of postsecondary education reported in the 2006 Census.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

Note: The reference category consists of the Canadian-born.

Source: Author's calculations based on data from the 2006 Census of Population.

11.3 The background determinants of employment earnings in Canada

We now turn to the analysis of background characteristics that affect employment earnings in Canada. Table A.5 reports estimates obtained without and with selectivity correction, respectively. We start by contrasting the results across the two empirical strategies used to estimate the earnings equation. We note that correcting for selection bias modifies the magnitude of many estimates. Given also that all selection terms are statistically significant at the 1% level, this Appendix will uniquely cover coefficients obtained after correcting for selection bias.

Table A.5

The background determinants of employment earnings in Canada, 25 to 64 year-olds with a postsecondary education, multivariate results

	Paid employees							
	Estimates without selectivity correction				Estimates with selectivity correction			
	Under educated	Correctly matched	Over-educated	All	Under educated	Correctly matched	Over-educated	All
Background variables	coefficients				coefficients			
A. Major postsecondary field of study								
Education	(1)	-0.108***	-0.104***	-0.099***	-0.132***	-0.423***	-0.148***	-0.096***
Visual arts	-0.077***	-0.060***	-0.145***	-0.176***	-0.037***	-0.128***	-0.163***	-0.185***
Humanities	-0.134***	-0.209***	-0.158***	-0.193***	-0.145***	-0.183***	-0.167***	-0.205***
Social sciences	-0.034***	-0.025***	-0.094***	-0.093***	0.022**	-0.050***	-0.104***	-0.100***
Life / physical sciences	0.016	-0.072***	-0.065***	-0.081***	-0.092***	-0.097***	-0.074***	-0.085***
Computer sciences	0.052***	0.032***	-0.102***	-0.039***	-0.165***	-0.172***	-0.143***	-0.040***
Engineering sciences	0.058***	0.082***	0.069***	0.069***	0.127***	-0.147***	0.058***	0.067***
Health / welfare sciences	0.029***	-0.019**	-0.014***	-0.021***	0.023***	-0.377***	-0.050***	-0.027***
Agriculture	-0.112***	-0.103***	-0.070***	-0.107***	0.110***	-0.060***	-0.063***	-0.107***
Other fields of study	0.057***	-0.029**	-0.025***	-0.024***	0.314***	-0.053***	-0.014***	-0.021***
B. Gender and household demographic structure								
The respondent is male	0.208	0.169***	0.276***	0.254***	0.110***	0.169***	0.272***	0.252***
He / she lives with at least one child <2, none >5, possibly children 2 to 5 also	-0.153	-0.169***	-0.157***	-0.152***	-0.196***	-0.236***	-0.159***	-0.150***
He / she lives with none child <2, at least one child 2 to 5, non>5	0.042	0.043***	0.053***	0.056***	0.028***	0.006	0.050***	0.056***
C. Status in the economic family, health status and age								
He / she is is not primary household maintainer	-0.102***	-0.106***	-0.123***	-0.122***	-0.019***	-0.018***	-0.126***	-0.125***
He / she has health problems that reduce his / her amount of activity	-0.191***	-0.151***	-0.216***	-0.207***	-0.049***	-0.029***	-0.240***	-0.218***
Age of the respondent (in years)	0.105***	0.110***	0.087***	0.096***	0.087***	0.092***	0.092***	0.098***
Age of the respondent squared / 100	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
D. Visible minority status and official language spoken								
He / she belongs to a visible minority group	-0.159***	-0.149***	-0.161***	-0.169***	-0.055***	-0.065***	-0.149***	-0.168***
He / she speaks English	0.296***	0.227***	0.183***	0.209***	0.112***	0.009***	0.207***	0.218***
He / she speaks French	0.280***	0.231***	0.190***	0.213***	0.113***	-0.018***	0.213***	0.223***
He / she speaks English and French	0.178*	0.191***	0.093***	0.125***	0.043***	-0.005***	0.110***	0.130***
E. Work schedule and occupation category								
He / she works mainly full-time	1.002***	0.969***	1.053***	1.054***	1.004***	0.972***	1.052***	1.052***
He / she works in management occupations	0.184***	0.224***	0.226***	0.303***	0.183***	0.217***	0.226***	0.290***
He / she works in natural applied sciences and related occupations	0.037***	-0.002	0.082***	0.163***	0.039***	-0.001	0.080***	0.147***
He / she works in health occupations	0.096***	0.172***	0.257***	0.296***	0.094***	0.170***	0.252***	0.272***
He / she works in social sciences / education / government services / religion	-0.208***	-0.110***	-0.043***	0.052***	-0.210***	-0.109***	-0.037***	0.037***
He / she works in arts / culture / recreation / sport	-0.212***	-0.216***	-0.203***	-0.086***	-0.209***	-0.211***	-0.204***	-0.108***
He / she works in sales /services occupations	0.046***	-0.015	-0.244***	-0.238***	0.048***	-0.019	-0.245***	-0.237***
He / she works in trades /transport / equipment operator / related occupations	0.065***	0.305***	-0.099***	-0.053***	0.064***	0.312***	-0.100***	-0.055***
He / she works in occupations unique to primary industry	(1)	(1)	-0.288***	-0.313***	(1)	(1)	-0.288***	-0.301***
He / she works in occupations unique to processing / manufacturing / utilities	(1)	0.333***	-0.072***	-0.099***	(1)	0.350***	-0.072***	-0.088***

Table A.5 concluded

The background determinants of employment earnings in Canada, 25 to 64 year-olds with a postsecondary education, multivariate results

	Paid employees							
	Estimates without selectivity correction				Estimates with selectivity correction			
	Under educated	Correctly matched	Over-educated	All	Under educated	Correctly matched	Over-educated	All
Background variables	coefficients							
F. Area and province of residence 1 year ago								
He / she lived in an rural area	-0.081***	-0.046***	-0.085***	**-0.081*** **	-0.024***	-0.009**	-0.089***	**-0.083*** **
The province of residence is not applicable	-0.649***	-0.673***	-0.853***	**-0.794*** **	-0.583***	-0.554***	-0.910***	**-0.815*** **
He / she lived in Newfoundland and Labrador	-0.314***	-0.248***	-0.352***	**-0.340*** **	-0.220***	-0.252***	-0.333***	**-0.334*** **
He / she lived in Prince Edward Island	-0.286***	-0.300***	-0.279***	**-0.294*** **	-0.251***	-0.285***	-0.259***	**-0.289*** **
He / she lived in Nova Scotia	-0.214***	-0.241***	-0.253***	**-0.250*** **	-0.186***	-0.198***	-0.233***	**-0.255*** **
He / she lived in New Brunswick	-0.237***	-0.249***	-0.282***	**-0.277*** **	-0.199***	-0.251***	-0.265***	**-0.273*** **
He / she lived in Quebec	-0.171***	-0.185***	-0.192***	**-0.191*** **	-0.114***	-0.133***	-0.197***	**-0.193*** **
He / she lived in Manitoba	-0.126***	-0.138***	-0.134***	**-0.130*** **	-0.147***	-0.121***	-0.133***	**-0.139*** **
He / she lived in Saskatchewan	-0.118***	-0.117***	-0.132***	**-0.129*** **	-0.136***	-0.140***	-0.133***	**-0.128*** **
He / she lived in Alberta	0.045***	0.066***	0.041***	**0.044*** **	0.033***	0.090***	0.038***	**0.043*** **
He / she lived in British Columbia	-0.054***	-0.084***	-0.042***	**-0.058*** **	-0.016**	-0.036***	-0.048***	**-0.061*** **
He / she lived in Yukon	0.013	-0.036	-0.056**	**-0.048** **	-0.083	-0.005	-0.055**	**-0.045** **
He / she lived in Northwest Territories	0.204***	0.149***	0.216***	**0.194*** **	0.089***	0.125***	0.219***	**0.198*** **
He / she lived in Nunavut	0.191***	0.232***	0.011	**0.090*** **	0.034	0.237***	0.014	**0.096*** **
Constant	7.302***	7.439***	7.596***	**7.488*** **	9.84***	8.732***	7.245***	**7.367*** **
Selection term	...	...	...	...	-0.737***	-0.805***	0.22***	**0.091*** **
Population	**209,538**	**302,489**	**861,084**	**1,373,111**	**209,538**	**302,489**	**861,084**	**1,373,111**
Pseudo R^2	0.3	0.359	0.36	**0.366**	0.298	0.358	0.356	**0.362**

... not applicable

* p<0.10, statistically significant at the 10 percent level

** p<0.05, statistically significant at the 5 percent level

*** p<0.01, statistically significant at the 1 percent level

1. Indicates that this variable was dropped from the regression model in order to correct for multicollinearity problems.

Note: The regression model also includes an interaction between the location of study and the immigration cohort

Excluded categories are: business / administration, married / common-law; female; people living with none child <25, at least one child 2 to 5 or more, None >5, people living with at least one child < 2, some > 5, children 2 to 5 also, people living with none child < 15, at least one child 15 to 24, children > 24 also,

People living with none child <2, at least one child 2 to 5, children >5 also, people living with none child <6, at least one child 6 to 14, children >14 also; Individuals who were born in Canada and whose parents were also born in Canada; people who are not the household maintainer; people who speak neither English nor French;

People without health problems; part-time workers; Individuals who work in Business / Finance / administrative occupations; those not in the visible minority group; Ontario residents.

Source: Author's calculations based on data from the 2006 Census of Population.

First of all, our results indicate the existence of a field of study premium on Canada's labour markets. Among all wage sector employees, for instance, graduates from business / administration fields (the reference category) enjoyed an earnings premium over graduates from fields other than engineering, especially those who studied visual arts and humanities. A similar earnings pattern is also observed when overeducated employees are considered. Concerning correctly-matched employees, people who studied business / administration earned on average substantially more than graduates from any other field of study. These findings corroborate Sweetman and McBride (2004) who showed that in Canada as of 1996, arts, literature and humanities were the lowest paying fields of study, whereas business, law and related fields had greater labour earnings. Among undereducated employees, graduates from agriculture, social sciences, engineering sciences and health/welfare sciences were the only ones with higher employment earnings than graduates from business / administration.

Differences in employment earnings are also explained by differences in working schedule and occupation. For instance, full-time employees enjoyed a substantial wage premium over their part-time counterparts. In comparison with people who worked in business, finance or administrative occupations, those employed in occupations including management, natural applied sciences and health had, on average, greater employment earnings. By contrast, those employed in recreation occupations (i.e., arts, culture or sports), occupations unique to primary industry, processing, manufacturing or utilities had lower employment earnings.

It is interesting to note that among overeducated employees, those who worked in trades, transport, equipment operator or related occupations earned, on average, less than their counterparts who worked in business, finance or administrative occupations. When correctly-matched or undereducated employed are considered, however, we notice a reverse situation: people who worked in trades, transport, equipment operator or related occupations earned, on average, more than those who were employed in business, finance or administrative occupations.

Many other background characteristics that determine employment earnings in Canada are in line with prior Canadian research and match findings for other developed economies, irrespective of the level of education-job match. For instance, employment earnings grew with age, but a decreasing at rate, suggesting that in the Canadian economy, the market price of individual skills increases significantly with labour market experience. Also, we notice that men had on average, greater earnings than women. As Table A.5 shows, differences in language skills determined employment income: people able to use at least one of Canada's official languages had greater earnings than those with poor language skills. States such as belonging to the visible minority group, experiencing health problems, not being the primary maintainer and living with children aged 0 to 2 were all associated with a substantial wage disadvantage on Canada's labour markets whereas living with children aged 2 to 5 was a state associated with a small wage advantage.

On average, employees who lived in rural areas earned less than those who resided in urban areas. Finally, our estimates show that Ontarians had greater employment earnings than individuals who lived in the Maritimes (i.e., Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick), Western Canada (i.e., Manitoba, Saskatchewan, and British Columbia), Quebec or Yukon. However, they earned, on average, less that wage sector employees who lived in Alberta or Northwest Territories. This last feature is not surprising given: (i) the importance of high paying industries such as the oil industry in Alberta and the mining industry in Northwest Territories; the strictly positive relationship between labour earnings and education level, and; (iii) the restriction of our population to prime-aged (age 25 to 64) individuals with a postsecondary certificate, degree or diploma.

11.4 Predicted relative Impact of location of highest postsecondary study on employment earnings of immigrants to Canada

Table A.6 shows the effect of location of highest postsecondary study on employment earnings of immigrants, as compared with the Canadian-born. We used these multivariate results to build Charts 2.A to 2.D analyzed in the section 7.2. To illustrate how Table A.6 works, we will use the undereducated group as an example.

To illustrate how Table A.6 works, we use undereducated employees as an example. Our estimates show that very recent, recent and established immigrants who completed their postsecondary education in Canada had average annual earnings that are, respectively, 23.41% $[=(\mathrm{EXP}[-0.266-0.5*(0.038)^{2}]-1)*100]$ (section A; columns 2-3; row 1)],10.21% $[=(\mathrm{EXP}[(-0.266+0.125)-0.5*[(0.038)^{2}+(0.044)^{2}]]-1)*100]$ (section A; columns 2 and 3; row 1) + (section B; columns 2-3; row 1)] and 2.51% $[=(\mathrm{EXP}[(-0.266+0.242)-0.5*[(0.038)^{2}+(0.038)^{2}]]-1)*100]$ (section A; columns 2 and 3; row 1)+ (section C; columns 2-3; row 1)] lower than their Canadian-born counterparts, everything else held equal.

Table A.6

Predicted relative impact of location of highest postsecondary study on employment earnings of immigrants to Canada, 25 to 64 year-olds with a postsecondary education

	Estimates without selectivity correction							
	Undereducated		Correctly matched		Overeducated		All paid employees	
Location of study	Coefficient	standard error	Coefficient	standard error	Coefficient	standard error	Coefficient	standard error
Constant term	**7.302*****	**(0.098)**	**7.439*****	**(0.074)**	**7.596*****	**(0.030)**	**7.486*****	**(0.026)**
A. Fixed effect of immigrants' location of postsecondary study								
Canada	-0.266***	(0.038)	-0.257***	(0.029)	-0.383***	(0.016)	-0.355***	(0.014)
United States	-0.298***	(0.091)	-0.252***	(0.042)	-0.366***	(0.026)	-0.335***	(0.022)
United Kingdom	-0.163**	(0.074)	-0.131***	(0.051)	-0.328***	(0.030)	-0.285***	(0.025)
Philippines	-0.373***	(0.090)	-0.562***	(0.044)	-0.489***	(0.015)	-0.555***	(0.014)
India	-0.523***	(0.091)	-0.556***	(0.046)	-0.661***	(0.015)	-0.669***	(0.014)
China	-0.887***	(0.111)	-0.723***	(0.036)	-0.801***	(0.017)	-0.829***	(0.015)
Pakistan	-0.693***	(0.198)	-0.776***	(0.100)	-0.968***	(0.028)	-0.976***	(0.027)
Poland	-0.895	(0.616)	-0.652***	(0.160)	-0.619***	(0.075)	-0.655***	(0.073)
France	-0.291***	(0.063)	-0.359***	(0.061)	-0.498***	(0.034)	-0.466***	(0.028)
South Korea	-0.722***	(0.197)	-0.776***	(0.113)	-0.793***	(0.051)	-0.825***	(0.045)
Romania	-0.380***	(0.096)	-0.649***	(0.067)	-0.731***	(0.028)	-0.754***	(0.026)
Hong Kong	-0.741**	(0.357)	-0.699***	(0.257)	-0.751***	(0.126)	-0.746***	(0.109)
Russia	-0.509***	(0.195)	-1.053***	(0.138)	-0.895***	(0.038)	-0.950***	(0.036)
Germany	-0.085	(0.162)	-0.562***	(0.128)	-0.485***	(0.057)	-0.491***	(0.051)
Iran	-0.533**	(0.223)	-0.698***	(0.071)	-0.739***	(0.053)	-0.769***	(0.043)
Other countries[1]	-0.423***	(0.043)	-0.608***	(0.029)	-0.646***	(0.011)	-0.660***	(0.010)
B. Additional effect of recent-immigrant[2] cohort								
Canada	0.125***	(0.044)	0.069**	(0.033)	0.178***	(0.019)	0.151***	(0.016)
United States	0.237**	(0.109)	0.122**	(0.058)	0.118***	(0.038)	0.116***	(0.031)
United Kingdom	0.115	(0.111)	0.114*	(0.069)	0.230***	(0.039)	0.193***	(0.033)
Philippines	0.195	(0.124)	0.286***	(0.061)	0.285***	(0.020)	0.287***	(0.019)
India	0.250**	(0.111)	0.310***	(0.056)	0.331***	(0.021)	0.332***	(0.019)
China	0.426***	(0.135)	0.363***	(0.046)	0.345***	(0.023)	0.364***	(0.020)
Pakistan	0.434*	(0.234)	0.328***	(0.123)	0.323***	(0.040)	0.337***	(0.037)
Poland	0.545	(0.624)	0.400*	(0.208)	0.265***	(0.097)	0.284***	(0.091)
France	0.146	(0.093)	0.114	(0.099)	0.359***	(0.045)	0.290***	(0.039)
South Korea	0,246	(0.253)	0.278*	(0.150)	0.221***	(0.073)	0.227***	(0.064)
Romania	0.116	(0.148)	0.379***	(0.077)	0.418***	(0.039)	0.428***	(0.034)
Hong Kong	0.323	(0.368)	0.466*	(0.271)	0.373***	(0.133)	0.374***	(0.114)
Russia	0.168	(0.223)	0.514***	(0.159)	0.368***	(0.045)	0.386***	(0.043)
Germany	-0.308	(0.223)	0.405***	(0.140)	0.198**	(0.081)	0.184***	(0.070)
Iran	0.084	(0.302)	0.399***	(0.090)	0.240***	(0.070)	0.290***	(0.057)
Other countries[1]	0.077	(0.056)	0.255***	(0.036)	0.246***	(0.015)	0.240***	(0.014)
C. Additional effect of the established immigrant[3] cohort								
Canada	0.242***	(0.038)	0.258***	(0.029)	0.390***	(0.016)	0.355***	(0.014)
United States	0.291***	(0.099)	0.211***	(0.046)	0.335***	(0.029)	0.299***	(0.024)
United Kingdom	0.256***	(0.076)	0.150***	(0.056)	0.395***	(0.032)	0.340***	(0.026)
Philippines	0.233**	(0.098)	0.391***	(0.050)	0.403***	(0.016)	0.405***	(0.015)
India	0.284**	(0.112)	0.454***	(0.057)	0.513***	(0.019)	0.499***	(0.018)
China	0.772***	(0.129)	0.493***	(0.060)	0.506***	(0.030)	0.528***	(0.026)
Pakistan	0.425*	(0.234)	0.597***	(0.134)	0.660***	(0.045)	0.657***	(0.042)
Poland	0.630	(0.618)	0.375**	(0.170)	0.394***	(0.076)	0.396***	(0.074)
France	0.221***	(0.086)	0.372***	(0.076)	0.478***	(0.042)	0.425***	(0.036)
South Korea	0.183	(0.264)	0.421***	(0.149)	0.415***	(0.073)	0.410***	(0.064)
Romania	0.155	(0.122)	0.317***	(0.098)	0.512***	(0.037)	0.486***	(0.034)
Hong Kong	0.625*	(0.360)	0.581**	(0.262)	0.664***	(0.128)	0.654***	(0.110)
Russia	0.189	(0.246)	0.602***	(0.176)	0.507***	(0.049)	0.512***	(0.047)
Germany	-0.037	(0.186)	0.542***	(0.147)	0.418***	(0.065)	0.395***	(0.058)
Iran	0.308	(0.310)	0.275	(0.183)	0.455***	(0.068)	0.438***	(0.061)
Other countries[1]	0.316***	(0.047)	0.475***	(0.032)	0.502***	(0.013)	0.496***	(0.012)
Selection term	...	...	...	...	...	...	...	...
R^2	0.3	...	0.359	...	0.36	...	0.366	...
Observations	209,538	...	302,489	...	861,084	...	1,373,111	...

Table A.6 continued

Predicted relative impact of location of highest postsecondary study on employment earnings of immigrants to Canada, 25 to 64 year-olds with a postsecondary education

	Estimates with selectivity correction							
	Undereducated		Correctly matched		Overeducated		All paid employees	
Location of study	Coefficient	standard error	Coefficient	standard error	Coefficient	standard error	Coefficient	standard error
Constant term	**9.84*****	**(0.149)**	**8.732*****	**(0.086)**	**7.245*****	**(0.039)**	**7.367*****	**0.026**
A. Fixed effect of immigrants' location of postsecondary study								
Canada	-0.066*	(0.039)	0.006	(0.032)	-0.444***	(0.017)	-0.380***	(0.014)
United States	-0.155*	(0.091)	-0.074*	(0.043)	-0.395***	(0.026)	-0.350***	(0.022)
United Kingdom	-0.060	(0.073)	0.060	(0.051)	-0.340***	(0.030)	-0.291***	(0.025)
Philippines	0.028	(0.092)	0.111**	(0.051)	-0.405***	(0.016)	-0.540***	(0.014)
India	-0.189**	(0.093)	-0.080	(0.049)	-0.615***	(0.016)	-0.664***	(0.014)
China	-0.495***	(0.111)	-0.223***	(0.039)	-0.804***	(0.017)	-0.845***	(0.015)
Pakistan	-0.171	(0.196)	-0.152	(0.102)	-0.977***	(0.028)	-0.991***	(0.027)
Poland	-0.491	(0.618)	-0.076	(0.158)	-0.620***	(0.075)	-0.659***	(0.073)
France	-0.236***	(0.064)	-0.086	(0.060)	-0.506***	(0.034)	-0.472***	(0.028)
South Korea	-0.391**	(0.199)	-0.102	(0.115)	-0.859***	(0.051)	-0.866***	(0.045)
Romania	0.022	(0.102)	-0.111	(0.070)	-0.714***	(0.028)	-0.763***	(0.026)
Hong Kong	-0.466	(0.353)	-0.515**	(0.252)	-0.789***	(0.126)	-0.765***	(0.109)
Russia	0.018	(0.200)	-0.464***	(0.140)	-0.890***	(0.038)	-0.956***	(0.036)
Germany	0.250	(0.169)	-0.189	(0.127)	-0.502***	(0.057)	-0.496***	(0.051)
Iran	-0.118	(0.225)	-0.150**	(0.075)	-0.782***	(0.053)	-0.799***	(0.043)
Other countries[1]	-0.062	(0.046)	-0.116***	(0.033)	-0.662***	(0.011)	-0.676***	(0.010)
B. Additional effect of recent-immigrant[2] cohort								
Canada	0.043	(0.045)	-0.081**	(0.034)	0.223***	(0.019)	0.168***	(0.016)
United States	0.082	(0.108)	0.085	(0.059)	0.142***	(0.038)	0.126***	(0.031)
United Kingdom	0.043	(0.110)	0.050	(0.069)	0.246***	(0.039)	0.200***	(0.033)
Philippines	0.230*	(0.125)	0.173***	(0.061)	0.300***	(0.020)	0.295***	(0.019)
India	0.187*	(0.111)	0.169***	(0.056)	0.330***	(0.021)	0.333***	(0.019)
China	0.259*	(0.134)	0.144***	(0.046)	0.366***	(0.023)	0.378***	(0.020)
Pakistan	0.309	(0.233)	0.130	(0.122)	0.341***	(0.040)	0.346***	(0.037)
Poland	0.460	(0.628)	0.183	(0.205)	0.283***	(0.098)	0.290***	(0.092)
France	0.140	(0.095)	0.135	(0.098)	0.393***	(0.045)	0.304***	(0.039)
South Korea	0.267	(0.255)	0.160	(0.150)	0.238***	(0.073)	0.235***	(0.064)
Romania	-0.090	(0.150)	0.013	(0.081)	0.432***	(0.039)	0.447***	(0.034)
Hong Kong	0.166	(0.364)	0.436	(0.266)	0.401***	(0.132)	0.386***	(0.114)
Russia	-0.043	(0.226)	0.391**	(0.159)	0.396***	(0.046)	0.399***	(0.043)
Germany	-0.427*	(0.229)	0.324**	(0.139)	0.206**	(0.081)	0.185***	(0.070)
Iran	-0.063	(0.293)	0.187**	(0.091)	0.272***	(0.070)	0.306***	(0.057)
Other countries[1]	-0.053	(0.056)	0.090**	(0.036)	0.276***	(0.015)	0.253***	(0.014)

Table A.6 concluded

Predicted relative impact of location of highest postsecondary study on employment earnings of immigrants to Canada, 25 to 64 year-olds with a postsecondary education

	Estimates with selectivity correction							
	Undereducated		Correctly matched		Overeducated		All paid employees	
Location of study	Coefficient	standard error	Coefficient	standard error	Coefficient	standard error	Coefficient	standard error
C. Additional effect of the established[3] immigrant								
Canada	0.039	(0.039)	-0.007	(0.032)	0.445***	(0.017)	0.378***	(0.014)
United States	0.158	(0.098)	0.072	(0.047)	0.360***	(0.029)	0.308***	(0.024)
United Kingdom	0.162**	(0.075)	0.004	(0.056)	0.411***	(0.032)	0.348***	(0.026)
Philippines	0.148	(0.099)	0.155***	(0.051)	0.417***	(0.016)	0.415***	(0.015)
India	0.203*	(0.112)	0.338***	(0.057)	0.519***	(0.019)	0.503***	(0.018)
China	0.528***	(0.128)	0.275***	(0.060)	0.535***	(0.030)	0.545***	(0.026)
Pakistan	0.186	(0.231)	0.352***	(0.134)	0.683***	(0.045)	0.668***	(0.042)
Poland	0.473	(0.619)	0.155	(0.166)	0.437***	(0.076)	0.413***	(0.074)
France	0.231***	(0.086)	0.304***	(0.075)	0.490***	(0.042)	0.430***	(0.035)
South Korea	0.099	(0.266)	0.199	(0.151)	0.430***	(0.073)	0.418***	(0.064)
Romania	-0.062	(0.124)	-0.020	(0.102)	0.533***	(0.037)	0.508***	(0.034)
Hong Kong	0.365	(0.356)	0.452*	(0.257)	0.691***	(0.128)	0.668***	(0.110)
Russia	-0.107	(0.245)	0.499***	(0.175)	0.535***	(0.050)	0.523***	(0.047)
Germany	-0.217	(0.191)	0.506***	(0.145)	0.425***	(0.065)	0.394***	(0.058)
Iran	0.200	(0.313)	0.154	(0.182)	0.501***	(0.068)	0.462***	(0.061)
Other countries[1]	0.144***	(0.047)	0.219***	(0.033)	0.537***	(0.013)	0.513***	(0.012)
Selection term	-0.737***	(0.032)	-0.805***	(0.029)	0.22***	(0.015)	0.091***	(0.002)
R^2	0.298	...	0.358	...	0.356	...	0.362	...
Observations	209,538	...	302,489	...	861,084	...	1,373,111	...

... not applicable

* p<0.10, statistically significant at the 10 per cent level

** p<0.05, statistically significant at the 5 per cent level

*** p<0.01, statistically significant at the 1 per cent level

1. Countries that make up less than 5% of the locations of postsecondary education reported in the 2006 Census.
2. Recent immigrants are Individuals who have been landed immigrants to Canada from 5 to 10 years.
3. Established immigrants are individuals who have been landed immigrants for more than 10 years.

Source: Author's calculations based on data from the 2006 Census of Population.

11.5 A country-level analysis of the relative earnings incidence of location of highest postsecondary study

Appendix A.7 examines the comparative earnings advantage / disadvantage related to each of the targeted countries of graduations. For sake of simplicity and space, we chose to analyze earnings estimates of all paid employees which are corrected for potential sample selection bias (see, Chart 2.D, section 7.2). These coefficients estimates also tell a very interesting story:

Canada: Very-recent immigrants with a postsecondary education and aged 25 to 64, who completed their highest studies in Canada and worked as paid employees in 2006, earned on average, 32% less than their Canadian-born counterparts. At the same time, recent immigrants who completed their postsecondary education in Canada earned on average, 19% less than the Canadian-born, whereas established immigrants who achieved their postsecondary studies in Canada experienced no earnings disadvantage on Canada's labour markets in comparison with the Canadian-born who also worked as paid employees during this time period.

The United States: Very-recent, recent and established immigrants who received their postsecondary certificate, degree or diploma from an institution located in the United States and worked in the Canadian wage sector as employees in 2006, earned on average30%, 20% and 4% less than their Canadian-born counterparts, respectively.

The United Kingdom: Very-recent and recent immigrants employed in the Canadian wage sector in 2006, who completed their postsecondary education in the United Kingdom, earned on average, 25% and 9% less than their Canadian-born counterparts, respectively. At the same time however, established immigrants with a postsecondary certificate, degree or diploma for the United Kingdom, enjoyed on average, a 6% earnings premium over their Canadian-born counterparts.

Philippines: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from the Philippines who worked as paid employees in Canada in 2006, earned on average, 42%, 22% and 12% less than their Canadian-born counterparts, respectively.

India: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from an institution located in India, who worked as paid employees in Canada in 2006, earned on average, 49%, 28% and 15% less than their Canadian-born counterparts, respectively.

China: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from China, who were paid employees in Canada in 2006 , earned on average, respectively 57%, 37% and 26% less than their Canadian-born counterparts, respectively.

Pakistan: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from Pakistan, who were paid employees in Canada in 2006, earned on average, 63%, 48% and 28% less than their Canadian-born counterparts, respectively.

Poland: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from a foreign institution located in Poland, who were employees in the Canadian wage sector in 2006, earned on average 48%, 33% and 22% less than their Canadian-born counterparts, respectively.

France: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from a foreign institution located in France who worked as paid employees in Canada in 2006, earned on average, 38%, 16% and 4% less than their Canadian-born counterparts, respectively.

South Korea: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from South Korea, who were employed in the Canadian wage sector in 2006, earned on average, 58%, 47% and 36% less than their Canadian-born counterparts, respectively.

Romania: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from a foreign institution based in Romania who worked as paid employees in Canada in 2006, earned on average, 53%, 27% and 23% less than their Canadian-born counterparts, respectively.

Hong Kong: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from a foreign institution based in the special administrative region of Hong Kong, who secured paid employment in the Canadian wage sector in 2006, earned on average, 54%, 32% and 10% less than their Canadian-born counterparts, respectively.

Russian Federation: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from a foreign institution located in the Russian federation, who worked as paid employees in Canada in 2006, earned on average, 62%, 43% and 35% less than their Canadian-born counterparts, respectively.

Germany: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from Germany, who were paid employees in Canada in 2006, earned on average, 39%, 27% and 10% less than their Canadian-born counterparts, respectively.

Iran: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from Iran, who secured paid employment in Canada in 2006, earned on average, 55%, 39% and 29% less than their Canadian-born counterparts, respectively.

Other countries: Very-recent, recent and established immigrants with a postsecondary certificate, degree or diploma from a foreign institution located in countries other than Canada, the United States, the United Kingdom, Philippines, India, China, Pakistan, Poland, France, South Korea, Romania, Hong Kong, Russian Federation, Germany and Iran, who worked as paid employees in Canada in 2006, earned on average, 49%, 35% and 15% less than their Canadian-born counterparts, respectively.

Culture, Tourism and the Centre for Education Statistics

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Cumulative index

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The **Tourism Statistics Program** provides information on domestic and international tourism. The program covers the Canadian Travel Survey and the International Travel Survey. Together, these surveys shed light on the volume and characteristics of trips and travellers to, from and within Canada.

The **Centre for Education Statistics** develops and delivers a comprehensive program of pan-Canadian education statistics and analysis in order to support policy decisions and program management, and to ensure that accurate and relevant information concerning education is available to the Canadian public and to other educational stakeholders. The Centre conducts fifteen institutional and over ten household education surveys. Analysis is also published in *Education Matters* (81-004-XIE, free, http://www.statcan.ca/bsolc/english/bsolc?catno=81-004-X), and in the *Analytical Studies Branch research paper series* (11F0019MIE, free, http://www.statcan.ca/bsolc/english/bsolc?catno=11F0019M).

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